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THE

MEDICAL NEWS.

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VOL. XXVIII.

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PHILADELPHIA:
HENRY C. LEA.
1870.

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PHILADELPHIA:
COLLINS, PRINTER.

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THE MEDICAL NEWS AND LIBRARY.

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CLINICS.

CLINICAL LECTURE.

Lecture on the Treatment of Catarrh and Bronchitis.—By GEORGE JOHNSON, M. D., F. R. C. P., Prof. Med. in King's Coll.; Phys. to King's Coll. Hospital.—An ordinary catarrh, although not a dangerous or a very serious disease, is yet, with many persons, an oft recurring malady, which occasions a great amount of discomfort and annoyance both to the patient and to his associates; and, as treatment has considerable influence upon the progress of the disorder, it is worth while to give the subject careful consideration.

The exciting cause of a catarrh, in the great majority of cases, is a chill, or some unknown atmospheric influence, which tends to suppress the action of the skin; and the most successful plan of treatment consists in the employment of means for restoring the free action of the skin. The popular domestic treatment consists in the use of a hot foot-bath at bed-time, a fire in the bed-room, a warm bed, and some hot drink taken after getting into bed, the diaphoretic action being assisted by an extra amount of bed clothes. Complete immersion in a warm bath is more efficacious than a foot-bath; but the free action of the skin is much more certainly obtained by the influence of hot air—most surely and profusely, perhaps, by the Turkish bath. The Turkish bath, however, is not always to be had, and, even when available, its use in the treatment of catarrh is attended with some inconvenience. In particular, there is the risk of a too speedy check to the perspiration after the patient leaves the bath. On the whole, the plan which combines in the greatest degree efficiency with universal applicability consists in the use of a simple hot-air bath, which the patient can have in his own bed-room. All that is required is a spirit-lamp with a sufficiently large wick. Such lamps

Published monthly by HENRY C. LEA, No. 706 & 708 Sansom Street, Philadelphia, *for One Dollar a year; also, furnished* GRATUITOUSLY *to all subscribers of the "American Journal of the Medical Sciences," who remit the Annual Subscription, Five Dollars, in advance, in which case both periodicals are sent by mail free of postage.*

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are made of tin, and sold by most surgical instrument makers.

The lamp should hold sufficient spirit to burn for half an hour. The patient sits undressed in a chair with the lamp between his feet, rather than under the chair. An attendant then takes two or three blankets and folds them round the patient from his neck to the floor, so as to inclose him and the lamp, the hot air from which passes freely round his body. In from a quarter to half an hour there is usually a free perspiration, which may be kept up for a time by getting into bed between hot blankets. I have myself gone into a hot-air bath suffering from headache, pain in the limbs, and other indications of a severe incipient catarrh, and in the course of half an hour I have been entirely and permanently freed from these symptoms by the action of the bath.

Another simple and efficient mode of exciting the action of the skin consists in wrapping the undressed patient in a sheet wrung out of warm water, then, over this, folding two or three blankets. The patient may remain thus "packed" for an hour or two, until free perspiration has been excited.

I may mention, in passing, that the hot-air bath and the wet packing are very useful in the treatment of many forms of disease. I constantly employ both in the treatment of renal disease; and not long since I believe that by the wet packing I saved the life of a lady, in whom very alarming symptoms were associated with the imperfect outcoming of the rash of scarlatina.

Now, to return to the treatment of catarrh, let me impress upon you that the sweating plan of treatment, to be successful in cutting short the disease, must be adopted early—I mean within a few hours from the commencement of the symptoms.

Another mode of treating catarrh, which is very successful with patients who are tolerant of opium, consists in giving a dose of opium, or morphia, at bed-time. Within half-an-hour after the opiate is taken, it frequently happens that the unpleasant coryza, and every other symptom of catarrh, have passed away. If the patient can avoid exposure on the following day, the cure may be complete, and there is no need to repeat the dose.

It is probable that the good effect of the opiate is partly due to its diaphoretic action, which may be increased by combining it with ipecacuanha; but, besides its action upon the skin, there must be some direct influence on the nerves and vessels of the inflamed mucous membrane to explain the speedy relief from discomfort which follows the opiate dose. The opiate treatment of catarrh is not so generally applicable as the sweating plan, for the reason that many persons are intolerant of opium, or they cannot take it without suffering from headache, nausea, and other distressing symptoms, which render it an undesirable remedy for them. In any case the opiate treatment, like the diaphoretic method, is more successful in proportion as it is resorted to early in the attack.

In some persons, repeated doses of ammonia have the effect of lessening the coryza and other distressing catarrhal symptoms. Five grains of sesquicarborate of ammonia, or a drachm of the aromatic spirit, may be taken in water every three hours. A single dose of ammonia at bed-time is an efficient and useful diaphoretic, its action being aided by external warmth. Some catarrhal patients experience great relief from an occasional dose of spirit of camphor. The usual dose is from ten to thirty drops in a wineglassful of water. In ordinary catarrh, as a rule, no change of diet is required. A catarrh which has gone on unchecked for a few days, is sometimes much mitigated by a generous diet and an extra glass of wine.

Those who are especially liable to catarrh should be careful to keep their feet warm and dry; and they should be warmly clothed, wearing woollen next the skin. They should avoid excessive wrapping up; since this, with even gentle exercise, tends to overheat the body, and so to increase the risk of a subsequent chill. The practice of wearing a hare-skin, wash-leather, or thick folds of flannel over the chest, is to be condemned as at once filthy and unwholesome.

It may be well to remind catarrhal subjects that the nose is a natural respirator, so that, in passing from a hot room into the open air, if the mouth be kept closed, the air, in its passage through the nostrils, has its temperature raised before it enters the chest.

There is reason to believe that the daily use of a cold sponge-bath, or a shower-bath, has a wholesome hardening influence upon those who adopt it, and that it renders them less liable to attacks of catarrh.

Treatment of Acute Bronchitis.—Acute bronchitis is an exaggerated catarrh; the two diseases are essentially the same, and they require the same principle of treatment, only modified according to the character of the symptoms.

In the early stage of acute bronchitis, when the mucous membrane is dry and swollen, the hot-air bath or the wet packing may be employed once or oftener with advantage. Another very useful remedy in this stage is tartar emetic, in doses of one-sixth of a grain, combined with liquor ammoniæ acetatis. This mixture exerts a diaphoretic action both upon the skin and the mucous membrane of the air-passages; thus it brings on the stage of secretion, and with this a mitigation of the vascular engorgement. The patient should remain in bed, and the temperature of the room should be maintained at from 60 deg. to 65 deg., the air being kept moist by steam from the spout of a kettle, or a special boiler on the fire. The inhalation of steam, repeated several times in the course of the day, is often very soothing and beneficial. Hot fomentations may be applied to the front and back of the chest by means of spongio-piline, or flannels covered with mackintosh. A mild mustard-poultice to the front of the chest is a good remedy for a sense of tightness and dyspnœa; but I advise you not to excite painful inflammation of the skin by mustard or turpentine, or by any other means.

When dyspnœa, with a feeling of tightness and oppression at the chest, is urgent and distressing, the application of a few leeches to the chest, or a moderate abstraction of blood by cupping, often affords prompt, decisive, and permanent relief.—Venesection is very rarely reqnired; though, in the case of a plethoric subject suddenly seized with general capillary bronchitis, and threatened with death from apnœa, venesection may prove a life-saving remedy. Milk and beef-tea form the most suitable diet during this stage of the disease. Stimulants and opiates are to be avoided, as a rule, on account of their tendency to increase the congestion and dryness of the inflamed mucous membrane. In the second stage, when a free secretion has been established, antimony and acetate of ammonia are to be discontinued. At this period, a combination of sesquicarbonate of ammonia, with spirit of chloroform, is useful as a stimulating expectorant and antispasmodic. Brandy or wine in moderate quantities may now be required to sustain the strength. When, in the advanced stages, there is a profuse purulent secretion, with copious perspirations, the ammonia mixture may be replaced by one, each dose of which contains a grain of sulphate of quinia, two grains of sulphate of zinc, and twenty minims of aromatic sulphuric acid. This combination often checks very rapidly the excessive secretion from the bronchial mucous membrane. The stimulating expectorants are sometimes useful at this stage of the disease—I mean senega, squills, ammoniacum, and the compound tincture of benzoin. If, as sometimes happens, the stimulating expectorants suddenly check secretion, tighten the breath, and increase dyspnœa, their employment must at once be discontinued. When the secretions accumulate and threaten suffocation, the patient being blue, and cold, and drowsy, and the cough nearly or quite ceasing, an emetic of sulphate of zinc is often wonderfully efficacious in clearing the air-passages.

Here I must give you an especial warning with regard to opium. A patient who has been sitting up in bed, labouring for breath day and night, naturally craves for sleep, and begs for an opiate. Now, a small dose of opium given in such a case, has caused fatal narcotism in numberless instances. The opiate stops the cough, and, of course, the expectoration; the patient sleeps more and more heavily; meanwhile the secretion accumulates, and causes fatal apnœa. Never, therefore, give an opiate to a bronchitic patient who has the slightest blueness of the lips. When the expectoration is quite free, and the lips are florid, you may sometimes venture to give a small opiate with antimony or ipecacuanha, or you may give a drachm of the compound tincture of camphor, or twenty minims of chlorodyne. The good effects of a few hours' sleep thus procured are sometimes very manifest.

When bronchitis is associated with blood-contamination consequent on Bright's disease, diaphoretics, purgatives, and dry cupping over the loins, are amongst the most useful remedies.

The treatment of *chronic bronchitis* is essentially the same as that of the acute form of the disease. They merge into each other by imperceptible degrees. An acute attack may subside into a chronic condition, and exposure to cold will quickly convert chronic into acute bronchitis.

Amongst other remedies in the chronic stage, the inhalation of the vapour of creasote, or oil of turpentine, by means of Nelson's inhaler, is often beneficial. These vapours facilitate expectoration at the same time that they tend to check the profuse purulent secretion. The abundant secretion may sometimes be checked by inhaling, in the form of spray, a solution of tannic acid.

In treating diseases of the air-passages by the inhalation of vapours, bear in mind that these vapours rapidly pass beyond the lungs: they are quickly absorbed and enter the circulation, causing, in some instances, headache and other discomforts. The necessary contamination of the blood by the inhalation of vapours, renders this mode of medication less generally useful than it otherwise might be in the treatment of bronchial inflammation and catarrh.

Change of air, and, in particular, a residence in a mild, dry, and equable climate, are amongst the most important remedial and preventive measures.—British Medical Journal, Oct. 23, 1869.

HOSPITAL NOTES AND GLEANINGS.

Employment of Chloral Hydrate in Delirium Tremens.—In considering the history of the following ten cases, treated in the Liverpool Workhouse Hospital, under the care of Dr. J. H. Barnes, it will be at once evident that chloral, like most other remedies, varies very considerably in its action with various constitutions. While in one case thirty grains were sufficient to compose and give a night's sleep to a most excited and sleepless patient, in another case seventy grains produced no effect, while in yet another ninety grains procured a sleep of only two hours' duration. In all the cases where it was effectual in its operation, sleep was produced very rapidly, ranging from a period of fifteen minutes to two hours. In none of the cases was there that perfect composure and firmness of muscle noticeable after the sleep procured by half-ounce doses of the tincture of digitalis. In most of the cases slight congestion of the eye and face, and slight perspiration, were visible; while there was an absence of any disturbance at all attributable to the drug. Ten to twenty grain doses have been advocated as sufficient for delirium tremens cases, but from his own experience Mr. Barnes is disposed to consider sixty grains the minimum dose, and that any sleep that may have occurred after the smaller doses must have been simply that which so frequently comes to the relief of this class of patients *without* the aid of medicaments.

In this remedy, though we have not an altogether perfectly reliable agent, we have one, as far as experience points, capable of procuring, in *most* cases, a very *rapid* and *peaceful* state of sleep, and capable of administration without trouble or danger in exact definite quantities.

Case 1.—J. F., aged forty-seven, was found in the rigging of a ship in the Queen's Dock, and was with the greatest difficulty got down. He was excited and raving. On October 22d, at 2.10 P. M., seventy grains of chloral were given, but produced not the slightest effect. Being still violent and noisy on the 23d, he was given four drachms of tincture of digitalis at 12 P.M.; fell asleep in half an hour, and slept more or less the whole night. On awaking he was quiet and rational.

Case 2.—J. B., aged twenty-eight, a barman, said to have been drinking heavily, was admitted October 22d, in an excited condition; would not keep in bed. He was given, at 2 P. M., sixty grains of chloral. Slept at 9 A.M. on the 23d, and was quiet till noon. Another sixty grains of chloral was given at 3 P. M. Patient fell asleep at 3.15, and awoke at 4.45. He was quiet all night. On examination next morning, there were evidences of typhus, and patient was sent to the Fever Hospital.

Case 3.—J. J., aged thirty-nine, was excited and restless; would not keep in bed, being under the impression that people were going to injure him; tremulous and weak. On October 23d, at 2.10 P. M., he was given sixty grains of chloral; was slightly affected, but did not sleep. At 8 P. M. sixty grains more were given; he then fell asleep at 8.35, and slept till 6 the following morning; awoke rather excited, but slept again till 9 A. M., when he awoke rational and quiet.

Case 4.—R. B., aged forty, admitted in

an excited state, it taking five persons to control him, as he was not only violent, but very large and muscular. On October 31st he was given sixty grains of chloral at 1.40 P. M.; fell asleep at 2, and slept till 4, when he awoke excited. He vomited the first thing the next morning, and once afterwards. On the 2d November, at 2.15, ninety grains of chloral were administered, which caused him to sleep in fifteen minutes, the sleep lasting two hours, and being followed by another shorter sleep. While asleep, his breathing was as placid as an infant's; the eyelids could be raised with the finger, and the pupils were seen to be contracted; on placing the finger between the lids there was spasmodic contraction. Face flushed.

Case 5.—W. J., aged thirty-seven, was admitted, and during the whole of the first night, would not keep in bed, but was greatly excited. On November 7th he was given eighty grains of chloral. Patient went to sleep in fifteen minutes, and slept all night. On the 8th he was quiet and rational.

Case 6.—M. M., aged thirty-eight, admitted to the asylum on September 28th, 1869, for third attack of delirium tremens within a short time. Patient was pale, restless, and excited, did not sleep the whole night, or keep his bed; tremulous, with a pulse of 130 per minute. On the 29th he was given thirty grains of chloral in half an ounce of water. He had a quiet night, and was rational and composed next day.

Case 7.—T. K, aged thirty, was sleepless and very excited, with a pulse at 136. Kept making efforts to escape, under the delusion that people were trying to injure him. On September 30th he was given twenty-five grains of chloral, which produced no effect. On October 1st forty grains more were administered, which quickly induced sleep, lasting the night through. After the dose, the patient's face was flushed, and the body moist. There was no sickness, and on awaking he had acquired calmness and consciousness, but was slightly tremulous.

Case 8.—M. G, aged twenty-four, admitted October 9th, 1869, in a violent and excited state; would not keep in bed. Forty grains of chloral were administered in water, which rendered the patient quieter, producing a flushed face and perspiration, but no sleep. On the 11th he was given sixty grains of chloral at 2 P. M. He fell asleep at 3 P. M., and awoke at 6 P. M., sleeping again from 2 A. M. till 4 A. M. The face and eyes were congested, and the patient, on awaking, was noisy and excited. On the 12th sixty grains more of chloral were administered at 12.40 P. M., sleep supervening at 2.40 P. M., and lasting some three hours. Patient was still excited and noisy on awaking, but gradually became quieter, and was discharged well.

Case 9.—E. P., aged twenty four, was admitted on October 21st, at 6 A. M, in a very excited and restless condition; struggled violently with the attendants, under the impression that they and others were going to kill him. At 1 30 P. M. sixty grains of chloral were given, and he fell asleep at 1.55 P. M., woke at 3.45 P. M., slept again at 5.10 P. M., and was asleep most of the night. There was slight perspiration and flushing of the eyes and face, but no sickness.

Case 10.—J. M. D., aged thirty-five, was admitted on October 21st, sleepless, excited, and very shaky. At 2 P. M., sixty grains of chloral were given. Sleep commenced at 2.30, and with slight intervals continued all the afternoon and night. On the 27th, not having slept well the previous night, patient took sixty grains of chloral at 8 P. M. He fell asleep at 10 P. M., and awoke at 5 A. M. There was no sickness, flushing of the face, or perspiration.—Lancet, Nov. 27, 1869.

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Hydrate of Chloral.—Dr. J. W. Ogle has been giving a trial to this new remedy in several cases. It has proved most useful and satisfactory in its action as a hypnotic in small doses—viz., doses varying from five to ten grains. In a slight attack of delirium tremens, twenty grains acted very sufficiently and well in procuring sleep. In one case only did any unpleasantness attend its administration, and that was when peculiar sensations about the head were complained of by a woman suffering from chronic peritonitis, who took five grains. On the following night four grains were given along with a few drops of chloric ether, and no such unpleasant results followed.—Lancet, Oct. 16, 1869.

In the London Hospital the hydrate of chloral has been tried, but in much larger doses than given by Dr. Ogle. A dose of half a drachm was given to a man with disease of the elbow joint; and, as this produced no effect in three-quarters of an hour, a second dose was given. No appreciable effect followed, except that the man complained of a griping pain in his stomach He had complained of this before, however. A dose of half a drachm, on the same night, was given to a patient with disease of the ankle-joint; and then a second, in about three-quarters of an hour. This patient slept a little during the night. He complained of a good deal of headache in the morning. The next night, this patient had three doses of half a drachm each, at intervals of half an hour. In half an hour after the last dose, he was sound asleep. The sleep seemed quite natural. He woke two or three times in the course of the night; and when he woke in the morning, said he had been troubled with a frightful dream. He had no headache, and seemed well satisfied with his sleep. That night he had a dose of a drachm, without appreciable effect, and then half a drachm was given, after which, he went to sleep. He did not sleep continuously, but, when he woke in the morning, was without "dreams" or headache, and felt quite refreshed.

The first patient did not care to have the medicine again the second night, but, on the third, he took a dose of a drachm without effect. A second dose of half a drachm sent him to sleep, but he woke in the night, the nurse said. In the morning, he expressed himself as quite comfortable. The cases were under Mr. Hutchinson's care.

It appeared, therefore, that doses of half a drachm, at intervals of half an hour, were quite safe in adult males, and would procure natural sleep. In neither case was sleep produced within half an hour of the last dose. No further trials, however, were made, on account of the expensiveness of the drug. If Dr. Ogle's small doses should prove effectual in checking mental inquietude, the expense will of course, not be so serious an objection. The chloral used at the London Hospital was obtained from Mr. Squire.—British Med. Journ., Oct. 23, 1869.

MEDICAL NEWS.

DOMESTIC INTELLIGENCE.

Rights of the Medical Staffs of Hospitals and the College of Physicians of Philadelphia.—Many of our readers are aware that the clinical lectures of the Pennsylvania Hospital have been interfered with by the Board of Managers having unexpectedly authorized female students to attend them. This innovation occurred after the male students had purchased their tickets of admission to the practice of the house, and was regarded by them, as well as by the medical staff, as being in contravention of a contract implied in the sale and purchase of the tickets, and as a measure which threatened greatly to diminish the value of the clinical lectures.

Upon the latter ground, also, a protest against it was presented at a general meeting of the physicians and surgeons attached to the several city hospitals, and was signed by them and by a number of leading practitioners.

Moved by a similar sentiment the College of Physicians has not only pronounced upon the principles involved in the particular case which suggested the judgment, but also, as becomes a body so distinguished by its age, learning, and professional rank, has grounded its conclusions upon a just sense of the dignity of the profession, and its right to have a voice in the discussion of all questions which affect the relations of physicians and surgeons with the charitable institutions which they both serve and support.

It is one of the anomalies of the present age that medicine, which was never before so full of knowledge and power, nor so lavish in conferring benefits upon society, should, nevertheless, be so generally decried by teachers of philosophy, and subjected to such wanton insults by those it has most efficiently served.

In the army and navy, not only of the United States, but of Europe also, the claims of the medical staff to an appropriate rank are treated by the political authorities with derision and contempt.

The wise and enlightened counsel of our brethren to Boards of Managers concerning the construction and economy of hospitals is unceremoniously thrust aside; their administration of medical and surgical offices is sometimes interfered with, and they are made to feel, as far as can be, that, not educated, scientific, and skilful physicians, but managers and trustees, albeit entirely destitute of professional knowledge, are the proper and rightful judges of medical questions, and are entitled to the power, which in fact they exercise, of overriding remonstrance and despising advice. This conduct appears the more extraordinary, as it is certainly the more offensive, when it is remembered that in this country physicians serve the hospitals gratuitously, while everywhere else their services are remunerated.

The reasons for these anomalies, it apappears to us, are two in number. The one is that physicians, by unselfishly giving their time and skill to public institutions, have cheapened their value. The other is that the superficial and illogical education, which even the lowest classes of society now obtain, has created a class of critics and judges whose dogmatism is on a par with their ignorance, and whom no fear of disastrous consequences deters from rash experiment and arbitrary innovation.

It seems, therefore, to be high time that whatever of manliness and independence there is in the medical profession should be aroused, and that the managers of hospitals should be told, respectfully but plainly, that they are not the owners in fee simple of these institutions, but only administer them in trust for the public who support them, for the sick to whom they are devoted, for the physicians without whom they could not exist, and for the students of medicine to whose education they are indispensable.

This statement will enable our readers to understand more clearly the subjoined resolutions, which were unanimously adopted at an unusually large meeting of the College of Physicians of Philadelphia, held Dec. 1, 1869, and ordered to be published.

"*Resolved*, That as hospitals depend in a great measure for their efficiency and good repute upon the character and skill of their medical officers, and as these officers habitually perform their laborious and often dangerous duties without compensation, and with great devotion and zeal; it would seem that justice, as well as courtesy, required that in all things pertaining to the medical discipline of such institutions, the medical staff should not only be consulted, but that no measure materially affecting the patients should be adopted without their concurrence.

"*Resolved*, That in our judgment such consultation and concurrence are equally desirable, whenever it is proposed by the governing board of a hospital to change the system, established by long usage and general consent, of giving clinical instruction; and that students of medicine authorized to attend the clinics, as well as the medical staff, have good reason to feel aggrieved by regulations which are innovations upon established custom, which affect their interests seriously, and which have been enacted without their knowledge, concurrence, and consent."

JOHN H. PACKARD,
Secretary.

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Norfolk District Medical Society, and the Case of Dr. Green, late Passed Asst. Surg. U. S. N.—At a meeting of the above Society at Hyde Park, Mass., Nov. 10, 1869, the following resolutions were adopted. *Resolved:*—

"1. To express their sympathy with Dr. Green, and their approval of his conduct.

"2. That the resignation of his Commission was due to the dignity of the profession which he represents.

"3. That while his reprimand stands on record, it is not easy to see how any young gentleman of education and spirit can apply for admission to the Medical Staff of the Navy.

"4. That the present status of the Medical Staff of the Navy impairs the efficiency of the corps and the service, and constitutes a grievance demanding redress by Congress."

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Death from Chloroform.—A lady died in New York, Dec. 3, from the inhalation of chloroform. The jury found that her death was occasioned by inhaling chloroform to relieve headache.—Bost. Med. and Surg. Journ., Dec. 9, 1869.

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Montmorenci Springs, near Aiken, So. Ca.—Dr. W. H. GEDDINGS, a highly educated physician, has opened at the above place an institution as a retreat and sanatory resort for invalids, particularly those suffering with pulmonary affections. "It is not," he says, "in the strict sense of the term a sanatorium, but rather a pleasant and health-restoring resort for valetudinarians, as medical advice and assistance will not be given unless required and requested.

"In addition to the beneficial climatic influences which it enjoys in common with all the country surrounding Aiken, it presents the peculiar attractions of a romantic situation, the large and commodious mansion being placed on a high plateau commanding a view of a picturesque valley. Numerous springs furnish an abundant supply of the clearest and purest water, which is conveyed by an hydraulic ram to all parts of the house. A double veranda incloses three sides of the house. The southern aspect exposes it to the beneficial action of the bright sun and the mild air from that quarter, impregnated with the balsamic fragrance of the contiguous pine groves so grateful to tender lungs. The rooms are large, and the furniture modern and tasteful. The table will be provided with all procurable delicacies, carefully prepared."

In order to obtain accommodations it is desirable that visitors should apply to him by letter beforehand, so that a carriage may be at the station to meet them, and other preparations made for their suitable reception.

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Baltimore Medical Journal. — A new medical monthly with this title, to be edited by Drs. E. Lloyd Howard and T. S. Latimer, is announced; the first number to be issued early in January, 1870.

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Obituary Record.—It is with regret that we record the death, on the 17th of December, of Dr. Samuel Jackson, formerly of Northumberland, but for a number of years a resident of this city, at the mature age of eighty-two years. Dr. J. was a gentleman of extensive acquirements and an experienced physician, and contributed a number of valuable practical papers in years past to the American Journal of the Medical Sciences.

FOREIGN INTELLIGENCE.

Deaths from Chloroform.—On the 20th of March, a patient in the Lying-in Hospital died during the administration of chloroform, while undergoing an operation for the relief of prolapsus uteri. At the *post mortem* nothing unusual was discovered, except a slight flabby state of the heart.

Another case occurred in the Melbourne Hospital about a year and a half ago, when the *post mortem* examination disclosed a diseased state of the heart, but the description was very imperfect.—Brit. Med. and Surg Journ., Nov. 25, 1869, from Australian Med Gaz.

M. L. Labbe communicated to the Imperial Society of Surgery, March 31, 1869, a case of this. The subject of it was a man æt. 42, who had fractured both bones of his left leg January 19, 1869. Six days afterwards tetanic symptoms came on. To quiet the spasm, the next day chloroform was given, but after a few inspirations the pulse ceased, and the patient presented all the apparent signs of death. Artificial respiration was resorted to, the tongue drawn out, and after a short time the circulation and respiration were re-established. The patient was then put to bed, apparently in a satisfactory condition. But a moment afterwards the respiration suddenly ceased, and despite all the usual efforts, life became extinct.—Journ. Hebdom., April 30, 1869.

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Death from Drinking Chloroform.—A man, named Shakey, æt. 50, an inmate of the General Hospital, Jersey, has died in consequence of drinking chloroform. The head nurse, Joseph Hoare, deposed at the inquest that, as he was carrying a tray with some instruments in his hand, and a bottle of chloroform under his arm, the deceased called out to know "whether the bottle contained gin." Hoare told him that it contained "stuff to send people to sleep," and gave him the bottle to smell at. Shakey took out the stopper, and, instead of smelling at it, began to drink some. Hoare seized the bottle again, after Shakey had taken about a tablespoonful. No immediate effect followed; but, when Hoare returned, in about half an hour, the deceased looked drowsy; but, when spoken to, he regained his customary appearance, and is said to have looked quite cheerful. He soon, however, was noticed to be asleep. He was roused up again, and some ammonia given him. He went to sleep again, though the doses were repeated. Salt and water were tried, and then castor oil. Notwithstanding all the nurse's efforts, however, Shakey died about three hours after swallowing the chloroform. Dr. Godfray said there was no doubt that the small quantity of chloroform had proved fatal. He had read recently of the case of a person drinking half a pint without death ensuing.

Shakey was very feeble, and suffering from an incurable disease.—Brit. Med. Journ., Nov. 13, 1869.

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Lateral Deviation of the Eyes in Cases of Hemiplegia.—Deviation of both eyes from the side of the body paralyzed is a symptom which has been remarked in recent cases of hemiplegia by several observers—Gull, Vulpian, Prévost, Humphrey, Lockhart Clarke, Hutchinson, Broadbent, Russell Reynolds, and Hughlings Jackson. This curious symptom occurs occasionally with extensive cerebral hemorrhage, whether this be on the surface, or within the substance of the cerebral hemisphere. Dr. Hughlings Jackson has observed it in two cases of hemiplegia presumably the result of embolism, but in neither case was an autopsy obtained. Sometimes the head is turned in the same direction as the two eyes. It may last a few days or a few hours, but invariably passes off before other parts of the paralyzed regions recover. It must be carefully observed, too, that when there is continuous rigidity along with, or perhaps we should say instead of, hemiplegia, the eyes and head may turn to the side of the body affected by such rigidity or spasm; and if there be *occasional* spasm over and above the continued rigidity, the eyes and head turn still further in that direction. These two symptoms, the deviation of the head and of the two eyes, are of great physiological interest. M. Prévost thinks they imply rudimentary "rotation." They are of great value, also, in helping us to complete the parallel there seems to be betwixt hemiplegia from destruction of the corpus striatum, and hemispasm and hemichorea from instability of the cerebral region of which the corpus striatum forms part. Although the movement of turning the eyes to one side seems to be the only ocular movement lost when the corpus striatum is destroyed, the complementary study of hemispasm shows that other, probably all, ocular movements are represented in the corpus striatum. The ocular movement lost in hemiplegia is the one which is most largely represented of these movements. It suffers most in hemiplegia, just as the arm suffers more than the leg. When, however, a convulsion affects first one side of the body and then the other, we see two lateral deviations, and betwixt these, as the spasm is passing from one side of the body to the other, several conjugate deviations, showing discharge of processes for movements other than lateral of the two eyes. In hemiplegia, as we usually see it, there are no ocular symptoms. It is only when the damage to the brain is sudden and extensive that the deviation of the head and two eyes is observed. But a careful study of the phenomena of hemispasm shows, Dr. Hughlings Jackson thinks, that the cerebral hemisphere contains processes for movements of the unilateral, the alternate, and the bilateral movements of the whole body.—Lancet, Nov. 13, 1869.

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Dysenteric Arthritis.—Under this name Dr. Huette describes (Archives Gén. de Med., Aug., 1869) cases in which rheumatism attacks the joints during the course, or shortly after the cure of epidemic dysentery. A connection between epidemic dysentery and arthritic rheumatism has been noticed by Zimmermann, Lepecq de la Clôture, Stoll, &c. The author relates ten cases observed during an epidemic of dysentery in the Canton of Montargis, in 1854. The following are his conclusions: 1. There exists a variety of arthritis, having for its peculiar and necessary cause an epidemic inflammation of the mucous membranes of the rectum and of the colon. 2. This rheumatismal manifestation does not show itself during all epidemics of dysentery; it is dependent on a peculiar medical constitution; individual diathesis may favour its development. 3. Dysenteric arthritis differs in its causes, its progress, its general physiognomy, and in its consequences, from simple articular rheumatism. It is closely analogous to blennorrhagic rheumatism. 4. Dysenteric arthritis, which is almost always polyarticular, has a variable duration from several weeks to several months. It terminates by resolution in a large majority of cases, but under certain rare conditions it may end by suppuration and anchylosis. 5. Metastasis does not furnish an explanation of the occurrence of the arthritis, according to the old doctrine; it is more rational to explain its occurrence by a morbid affinity, which, the mucous membranes being affected, determines reflex pathological effects on other tissues.—Brit. and For. Med.-Chir. Rev., Oct. 1869.

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Successful Ovariotomy performed in the Fourth Month of Pregnancy, after Rupture of the Cyst and Peritonitis.—Mr. Henry Bateman reports in the Lancet for Sept.

18th, 1869, this case, occurring in a woman æt. 36, the mother of eight children. Mr. Spencer Wells was called in consultation, and confirmed the diagnosis as to the presence of an ovarian tumour, with free fluid surrounding it in the peritoneal cavity, and pregnancy about the commencement of the fourth month. It was agreed to offer the patient the choice of early tapping the abdomen or removing the ovary, but the latter was recommended notwithstanding the special risks arising from her pregnant condition and the coexistence of diffused peritonitis. The major operation was decided on. The tumour, with its contents, and the fluid surrounding it, weighed altogether thirty-seven pounds. There was a general injection of the peritoneum, but no recent lymph. There was some omental adhesion, and one vessel there needed a ligature, which was left in the abdomen. The pedicle was secured by a clamp, and fixed outside the wound, which was united by interrupted suture. Mr. Wells was extremely careful to cleanse the peritoneal sac thoroughly of all ovarian fluid, by repeated sponging, before closing the wound.

On the twenty-eighth day the patient returned home, in good health.

This case proves, 1st. That ovariotomy may be performed successfully when pregnancy has advanced to the fourth month, without occasioning abortion.

2dly. That recent peritonitis, consequent on a ruptured cyst and escape of its contents into the abdomen, is no bar to the operation.

3dly. That both these together will not preclude ovariotomy by the hands of a skilful operator, when the patient is calm, trustful, and in all respects amenable to the directions of the medical advisers, as was the case in this instance.

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Indian Hemp in Hydrophobia.—At a recent meeting (Dec. 2d) of St. Andrew's Medical Graduates' Association a communication was read from Prof. POLLI, of Milan, recommending the use of Indian hemp in large doses in hydrophobia. He related a case in which, although the patient died, the horror, and violence, and raving which torture hydrophobic patients were entirely subdued by its use.

In the discussion which ensued, Dr. Ross expressed an opinion that the frightful symptoms accompanying attempts to swallow were not depending on a mental or moral cause, but resulted from physical pain produced by any act of deglutition. He related a case which he had seen lately, in which Dr. Lockhart Clarke discovered no lesion of the nervous centres, but in which there was the small ulcer in the back of the pharynx, which had been described as an accompaniment of the disease.

Professor Polli also added a note on the fact that coffee, tea, and cocoa assist, while lemon juice, citric, malic, acetic, and tartaric acids prevent, the action of Indian hemp. The latter may truly be called antidotes.—Lancet, Dec. 11, 1869.

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Ascites cured by Copaiba.—Sir HENRY THOMPSON communicated to the Clinical Society of London a case of ascites successfully treated by copaiba. G. W——, aged sixty, was admitted into hospital under Sir Henry's care, on November 30th, 1868, with ascites, puffy ankles, pulmonary œdema, and scanty urine without albumen. His health had been good till July, 1868. During the following three months various remedies were employed, quinia and iron amongst others; but his condition became worse and worse, the increase of liquid in the peritoneum being so rapid that paracentesis was three times required. In March, the administration of copaiba was commenced, the dose being gradually increased until fifteen minims were taken every six hours. The improvement was immediate. The quantity of urine increased from fourteen ounces daily to several pints, and the belly measurement diminished from day to day. He left the hospital convalescent on May 10th, and is now in good health. In his comment on this case, Sir Henry Thompson pointed out that, although the quinia and iron may have contributed to the result, yet improvement commenced before they were given, and he considered that the copaiba acted beneficially as a diuretic.—Lancet, Nov. 27, 1869.

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Ice Poultices in Tympanites.—The Paris correspondent of the *British Medical Journal* states (see No. for Oct. 23, 1869) that Dr. Peter, Physician to La Pitié, employs a very efficacious and little known method of subduing the tympanitic distension of the abdomen, so often an urgent symptom in typhoid fever, viz., the use of what may be called "ice poultices." Small fragments of ice are scattered over a thick layer of dry linseed meal: in this way a poultice is formed, which, in consequence of the slow melting of the ice, is kept at the temperature of melting ice. To Professor Monneret belongs the credit of conceiving and introducing to the profession this very valuable method of treating tympanites.

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Diabetes in a Case of Tumour of the Medulla Oblongata.—J. B. Dompeling reports (Nederl. Arch. voor Geneesk., 1868, IV, and Archives Gén. de Méd., May, 1869) the case of a patient who met with a fall on the back of the head when about fifteen years of age. Since that time he suffered from sharp pains in the head and in the back of the neck; the lower limbs became considerably enfeebled, and there was diplopia. During the space of some years paresis of the limbs of the right side became established with marked blunting of tactile sensibility; sensitiveness to heat was augmented; all the muscles of the right eye were paralyzed; at the same time symptoms of diabetes appeared. The urine contained from five to seven parts per cent. of sugar; this proportion diminished during a season passed at Carlsbad, but soon after the disease advanced and was accompanied by fever and cough. The patient died suddenly six years after the first symptoms were observed. After death a tumour about the size of a small nut was found occupying all the right half of the medulla oblongata. It was continuous with the medulla, not limited. It was formed by a fasciculated sarcoma. On its inferior surface were found two small vesicles filled with fluid, but containing no trace of cysticercus. The longitudinal furrow of the floor of the fourth ventricle was thrust to the left; the roots of the accessory nerve and the lower root of the pneumogastric were very atrophied.—Brit. and For. Med.-Chir. Rev., Oct. 1869.

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Unique and Remarkable Case of Extra-Uterine Fœtation.—Dr. Lecluyse gives a remarkable case of this accident. A woman of twenty-eight, with deformed pelvis, was operated on, and delivered by Cæsarean section, August 15, 1866. She again became pregnant and in labour on March 23, 1868. On examination, the fœtus could be felt beneath the abdominal walls; but the pains shortly ceased, and it was determined to postpone the operation of section. In a few days a vaginal discharge of menstrual or bloody character appeared; no motions of the fœtus were felt, and the lower portion of the abdomen formed a kind of sac for the fœtus.

Cæsarean section was now performed with every care, and a seven or eight months' fœtus removed, which was well developed, and dead. The placenta was adherent to the intestines. The wound was closed by sutures, save at the lower part, from which the umbilical cord was allowed to depend, as it was not thought possible safely to detach the placenta by reason of its vascularity. On the fifth day the placenta was decomposed, and part of it removed; the patient died on the tenth day. On examination after death, it was found that the intestines bore no imprint of the placental attachment; but, what was most remarkable and interesting, the uterus, about the size of a goose-egg, was found in the right iliac fossa held by strong adhesions, and on its anterior aspect, and a little to the left of the mesial line, was the open wound left by the incision made in the former Cæsarean operation. The sides were cicatrized separately, and left a hiatus through which the ovum had escaped, and formed this remarkable and perhaps unique example.—Med. Press and Circular, Dec. 8, 1869.

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The Heart Transfixed by a Needle.—Prof. Biffi, at a meeting of the Milan Institute, presented the heart of a lunatic who had died in consequence of gangrene of the tongue which had supervened upon a bite which he had inflicted upon it during a maniacal paroxysm. At the autopsy a needle six centimetres in length was found in the left ventricle, its point, after perforating the valve, penetrating to the extent of one centimetre and a half into the left auricle. On inquiry being made, it was ascertained that the lunatic, twenty-two months prior to his death, had announced to his relatives that he had forced a needle into his heart; but little attention was paid to his statement, especially as no symptom of any disorder in the chest manifested itself, the pulse during all this time, too, being quite regular in its beats. Full details of the case are to be shortly published.—Med. Times & Gaz., Oct. 30, 1869, from Gaz. Med. Italiana-Lombardia, Oct. 16.

Experiments with Cobra Poison.—Dr. FAYRER is still continuing his experiments on snake poison. Certain specifics sent him by enthusiastic possessors thereof have failed to show any antidotal virtues. Various sets of experiments have been made to test the effect of tightly ligaturing the limb, both before and after the bite of the cobra, on the absorption of the poison. In the first set, ligatures were thrown loosely round the limbs of dogs, and tightened as firmly as a man's strength could draw them immediately after the limb had received the bite of the snake; the wound was also cauterized with a hot iron, carbolic acid being first rubbed into it; death, however, ensued in the usual time—showing the rapidity with which the poison is absorbed, and how much must be absorbed before a ligature can be used, even in the quickest possible manner, after the reception of a bite. The effect of tightly strangulating a limb before it was bitten was to retard the entry of the poison into the system; but so subtle is the poison, and so great its diffusive power, that after a while death resulted in fowls. The free use of the ligature, however, gives a certain amount of time to operate locally in attempting to neutralize the venom in the wound. Dr. Fayrer has noticed that occasionally a poisonous snake may bite without poisoning—a fact that should be remembered in explanation of so-called cases of recovery from snake-bite. To show the potency of the cobra poison, it may be mentioned that forty drops of the blood of a dog poisoned by a cobra, diluted with water and injected into a fowl's thigh, killed the bird in seventy-five minutes. Excision has also been practised by Dr. Fayrer, at once, within two or three seconds after the bite; yet in the meanwhile enough poison often entered the system to cause rapid death, though the fatal issue was retarded. The inference drawn is, that to cut the bitten part out extensively and immediately gives, perhaps, the best chance of recovery.—Lancet, Nov. 13, 1869.

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What is Blood-Fibrin?—A few years ago, physiologists thought that they had a tolerably clear notion as to what the fibrin of blood is. Schmidt, however, threw doubt on the matter by his theory that the fibrin of blood-clot does not exist as such in the circulating blood, but is the result of the union, out of the body, of "fibrinoplastic" and "fibrinogenous" matter. This year, Messrs. Béchamp and Estor have, in communications to the Academy of Sciences in Paris, announced that the substance called blood-fibrin is only a false membrane, formed of the organic molecules (*microzymes*) of the blood, aggregated by a substance which they secrete from the albumen of the blood. In a communication made to the Academy on September 20, they describe further researches in confirmation of their theory. They allege that the so-called fibrin, under favourable circumstances, is capable of being resolved into microzymes and bacteria—the latter being formed by the aggregation of microzymes. —Brit. Med. Journ., Oct. 9, 1869.

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Prof. Polli's Theory in regard to the Sulphites.—Polli's theory has been energetically questioned in Florence by Dr. Bellini, who endeavoured to prove that when the sulphites are given for some time in pretty large doses they may retard morbid fermentation, not as sulphites, but by rendering the fluids of the economy more alkaline. Dr. Paganucci supported this view (at a meeting of the Physico-Medical Society of Florence), and stated that, for anatomical purposes, he succeeded in retarding putrefaction by injecting into the vessels a solution of carbonate of soda.

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New Bases in Opium.—Since the discovery of apomorphia by the action of hydrochloric acid on morphia and codeia, further experiments have been carried on in the same direction in the chemical laboratory of St. Bartholomew's Hospital. We now learn on good authority that during the past fortnight three new bases have been discovered: one by the action of hydroiodic acid on codeia, the second by the action of water on chlorocodide, and the third by the action of hydrochloric acid on papaverine. We look forward with interest to the investigation of the physiological properties of these new bases, which, we understand, is being carried on by Dr. Gee.—Lancet, Sept. 25, 1869.

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Exuberance of Life in Great Varieties at Enormous Ocean Depths.—One of the most important scientific communications received of late years by any learned society is the report on the recent deep-sea explorations, made to the Royal Society on Thursday, Nov. 18th, by Dr. Carpenter. Our space will not allow us to make an analysis of it, but we may mention one or two of the startling facts which the deep-sea dredging has brought to light. The explorations have been conducted on board H. M. S. *Porcupine*, by Dr. Carpenter, Professor Wyville Thompson, and Mr. Gwyn Jeffreys. In the first place, this and former explorations have fully proved contrary to all preconceived opinions that life exists in wonderful variety and exuberance at enormous ocean depths, and that the temperature of the deep sea presents the most remarkable variations in degree.

"More remarkable still, it was found that a difference in bottom temperature between 32° and 47° existed at points only eight or ten miles distant from each other, beneath a uniform surface temperature of about 52°, and that where this was the case in the cold area the bottom was formed of barren sandstone, mingled with fragments of older rock, and inhabited by a comparatively scanty fauna, of an arctic or boreal character, while in the adjacent warm area the bottom surface was cretaceous, and the more abundant fauna presented characteristics due to the more temperate climate."

It is easy to see how this discovery gives to the winds many of our cherished ideas with regard to the succession of strata and of geological periods.

"The upheaval of a few miles of sea-bottom subject to these conditions would present to the geologist of the future two portions of surface totally different in their structure, the one exhibiting traces of a depressed, the other of an elevated temperature; and yet these formations would have been contemporaneous and conterminous. Wherever similar conditions are found upon the dry land of the present day, it had been supposed that the high and the low temperature, the formation of chalk and the formation of sandstone, must have been separated from each other by long periods, and the discovery that they may actually coexist upon adjacent surfaces has done no less than strike at the very root of many of the customary assumptions with regard to geological time."

Well might Sir Charles Lyell call these discoveries almost revolutionary in their character. It has been hitherto the custom to talk and write about the dark caves and recesses of ocean, but all this must be expunged from scientific writing and left to the poets. From the most profound depths—more than two thousand fathoms, nearly the height of Mont Blanc—animals of high organization, *and with perfect eyes*, have been brought to the surface by the dredge. Sir Charles Lyell suggested that the light which these creatures evidently enjoy must be a phosphorescent one. Over the whole of the warmer areas explored, the bottom was found to be covered with globigerina deposit—animals actively engaged in chalk formation. In the colder areas these are not found, but there we have beds of volcanic sand, with whole nations of echinoderms. Besides, from these great depths the dredge has brought up delicious sponges and foraminifera, zoophytes, molluscs, annelids, and crustaceans. One hundred and twenty-seven species of molluscs not previously known to exist in British seas were made captive, and many of them belong to new species. Dr. Carpenter promises shortly to exhibit to the Fellows of the Royal Society specimens of all the treasures of the deep which are thus wonderfully brought to light.—Med. Times and Gaz., November 27, 1869.

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Nitric Acid formed during a Thunderstorm.—Mr. Pepper says that when a spark from the great induction coil at the Polytechnic is passed through common air the result is a red coloration when blown against damp litmus paper. In order to ascertain whether the acid product was nitric acid, the "flaming" spark (nine or ten inches in length) was passed through a bottle containing distilled water, from which another tube passed to the air-pump on drawing the air slowly over the spark, and passing the former into the bottle, nitric acid was obtained in large quantities, so much so that it could be detected by the smell and taste as well as by the ordinary tests. The popular notion that nitric acid is always produced during a thunderstorm would, therefore, appear to be correct. Also, it is evident that the purifying influence of a thunderstorm is a popular idea founded on facts.—Med. Press and Circular, Dec. 8, 1869.

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Mr. Peabody.—In the Lancet for November 13th, 1869, we find the following eloquent and just tribute to this eminent American.

"We cannot withhold our tribute of praise from this great philanthropist. It would be presumptuous to attempt to magnify his munificence, or to specify the details of it. But we may be allowed to praise the wisdom which guided his charity, and especially the discrimination which induced him to spend so much of the money which he gave to the poor in the way of providing comfortable and decent homes for them. It is doubtful charity that merely throws money to the poor; but that is wise kindness that endeavours to place them in physical conditions favourable to health, decency, and comfort. It is becoming more and more evident that this attention to the physical surroundings and conditions of the poor is the only sound basis for all measures that contemplate their moral and spiritual improvement. That this princely philanthropist should pass through Westminster Abbey to be buried in his own America is the fit ending of one of the finest lives that has lately been lived. Such men scarcely die."

> "Quidquid ex illo amavimus, quidquid mirati sumus,
> Manet; mansurum est in animis hominum, in æternitate temporum,
> Fama rerum."

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Large Dose of Croton Oil taken by a Young Girl; Recovery.—Dr. MAUVEZIN relates (*Gaz. des Hôpitaux*, June 29) the case of a girl 6 years old, who, by mistake, swallowed forty-five drops of croton oil in some coffee and milk. She complained of the horrid taste of the drug, and a burning sensation at the isthmus faucium immediately after the ingestion. A little time afterwards there was great pain at the epigastrium, with severe vomiting, which lasted three-quarters of an hour. After the vomiting had ceased, the patient slept for four hours; and on awaking she said she was hungry, when some soup was given her. The child was then free from all pain, had two loose stools, and made a good recovery. Dr. Mauvezin is puzzled to explain this favourable result, and states that the oil was, on trial, found of good quality, and readily excited pustulation by friction.

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On Poisoning by Phosphorus.—Prof. RANIERI BELLINI contributes a lengthy paper on this subject to the Sperimentale and Annali di Chimica applicata alla Medicina, for May, 1869. He comes to the conclusion respecting antidotes, specially chemical antidotes, that nitrate and chloride of silver are the most promising. Phosphorus in the presence of nitric acid and oxide of silver is acidified at the cost of the oxygen, and produces a phosphate of silver, a compound not influenced by weak acids nor by the acids of the stomach. He reckons that for every centigramme of phosphorus three centigrammes of nitrate of silver are required. Hence, for an adult who has swallowed a poisonous dose of phosphorus (say five centigrammes), six centigrammes of nitrate of silver would be demanded, a dose of the silver salt which has been tolerated.—Brit. and For. Med.-Chir. Rev., Oct. 1869.

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Schönbein's Test for Prussic Acid.—M. SCOUTTETEN's report on this subject was read before the Academy of Medicine, and related to a posthumous paper by Schönbein on a new test for prussic acid. The test consists of a slip of test-paper made as follows: Dissolve forty-five grains of guaiacum in three ounces of alcohol, and into the solution put good but thin white filter-paper, and when the paper is well saturated take it out and gently dry it. Next prepare a solution of sulphate of copper by dissolving fifteen grains of sulphate of copper in one ounce and a half of water. When about to supply the test cut off a slip of the prepared paper, dip it into the copper solution, and hold the slip over the vessel or substance containing the hydrocyanic acid. The paper is turned of deep blue colour, the colour, according to the author of the test, being produced by the presence of the one-millionth of a grain of the acid.—Brit. and For. Med.-Chir. Rev., Oct. 1869.

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Iodoform.—M. NIESZKOWSKI has made this substance the subject of his thesis before the Faculty of Medicine of Paris. It is to be considered as greatly favouring cicatrization, and is also possessed of some anæsthetic properties. It is useful in soft chancre, more so than in the hard, in mercurial stomatitis, and lessens pain in cancer and epithelioma of the uterus. It may be used in the shape of powder, or mixed with cocoa butter, as an ointment, or mixed with collodion. It is useful to cover the dressings with adhesive plaster, in order to free the patient from the disagreeable smell of the iodoform.—Lancet, Oct. 2, 1869

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Danger of Uterine Injections.—Dr. COHNSTEIN gives (Beiträge z. Chron Metritis) a careful historical survey of the practice and opinions of those who have related their experience upon the injection of fluids into the uterus. The general results seem to be that the injection of very powerful caustics is likely to cause inflammation of the uterus and peritoneum, or severe prostration and uterine colics, and these dangers are less urgent if care be taken first to dilate the cervix uteri so that the return of the fluid injected into the cavity is easy —Brit. and For. Med.-Chir. Rev., Oct. 1869.

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Narcotics.—A book of Dr. FRONMULLER has just been published by Enke, in Erlangen, which is of great importance to pharmacologists and medical men in general: "Clinical investigations on the Action of Narcotics" These investigations extend over a lapse of nineteen years, and refer to 2328 actual cases, in each of which the experiments were repeated three successive times. The author principally studied opium and its alkaloids, cannabis, hyoscyamus, lactucarium, lupulin, musk, and solanin. Bromide of potassium did not seem to possess actual narcotic properties, and narcein was also found wanting; but cannabis yielded excellent results.—Lancet, Dec. 11, 1869.

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Mixed Clinics.—In an editorial in the (London) Medical Times and Gazette, Dec. 11, 1869, it is observed: "From America we received our first specimens of medical women. From America the first loud remonstrance on the part of medical men against the intermingling of the sexes in clinical study has just now reached us. Our transatlantic brethren have been the first to try the system, and a protest against it, signed by the medical and surgical staffs of twelve hospitals and medical schools, and by between sixty and seventy physicians practising in the city of Philadelphia, now lies before us. The protesters, amongst whose names will be found many of world-wide reputation, speak in no measured terms of the utter indecency of clinical teaching in classes composed of both sexes. They show that in such a class efficient instruction can only be given at the expense of modesty." After quoting several extracts from this document, the article concludes with the following remarks: "The idea of these ladies, either on the subject of physical examination in disease, or else of what female modesty requires, must be, we think, in a remarkably rudimentary condition. Good female nurses are the ministering angels of the sick-room. If ladies wish to be doctors, as long as they will get educated and examined apart from men, we have no wish to hinder them; but the idea of young men and women examining together in the same wards the chests and abdomens of male and female patients, and experimenting on their excretions, is simply revolting. We are glad that the medical men of Pennsylvania have come forward to protect at least the modesty of their own sex. We hope that their example will not be lost on the other, and we commend the whole position to the consideration of the Universities of Edinburgh and Paris."

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Saline Particles in the Atmosphere at the borders of the Ocean.—Dr. DHERCOURT states (L'Union Médicale, Oct. 2, 1869) that he concludes from numerous researches that there exists at the borders of the ocean an atmospheric zone which is constantly impregnated with saline particles.

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The Preservation of Wines.—Four years ago, M. PASTEUR announced that he had ascertained that wines became spoiled in consequence of the presence of microscopic organisms, which could be destroyed by exposing the wine to a temperature of 55 *centigrade* (131 deg. Fahr.) for a few moments only. A committee of experts in wines was appointed to make a comparative examination of wines which had, and which had not, been subjected to heat; M. Lapparent being president, and M. Dumas and M. Pasteur assisting. They have concluded, that it is impossible to deny that the preservation of wine in bottles is greatly improved by heating; that the destruction of the germs is perfect, without the least impairment of the taste, colour, or limpidity of the wines.

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Scarlet Fever in London.—The epidemic of scarlet fever in London continues to increase; the number of deaths from that disease during the week previous to 11th December was 245.

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Without doubt, one of the best works upon the subject which has ever been published; it is complete on the subject of which it treats, and is a necessary work for every physician who attempts to treat diseases of the eye.—*Dominion Med. Journal*, Sept. 1869.

This work embraces the modern doctrines and practice of British and foreign schools of ophthalmology, with adaptations to the American student from the pen of Dr. I. Minis Hays, of Philadelphia. The pre-eminent standing of the author in this department of science is ample evidence of the value of the book. No other work can compare with it, except the Treatise of Stellwag, which is a translation from the German, and which represents the German school—the pioneers, by the way, in modern ophthalmology. To American students and practitioners, the treatise of Wells, whilst it embodies the substance of German ophthalmic science, is enhanced in value by the superadded labors of numerous British explorers and operators.—*Pacific Med. and Surg. Journal*, Sept. 1869.

Great care has been taken by Professor Wells to point out the great advances that have been made in late years by British and Continental ophthalmologists; modern views on pathology and treatment are given, and their value tested by the results of clinical experience. The manner in which a great mass of accumulated information is laid before the reader in this well-filled volume leaves nothing to be desired. It is the production of one who seems to have the power of giving, in very clear language, the results of long-continued devotion to the study of his subject in foreign cliniques, and, as a teacher and assistant surgeon in the chief ophthalmic school of this country; it has, moreover, the great advantage of being a thoroughly practical work, dealing not so much with disputed points or minute differences of morbid structure, as with diagnosis and treatment.—*Lond. Med. Times and Gaz.*, July 24, '69.

To the general practitioner, we unhesitatingly declare that the work of "Wells" will in preference commend itself, by its clear and intelligent style, and comparative freedom from technicalities. In respect to its composition we cannot give it higher compliment than to award to it, in its special province, that position which Watson's Theory and Practice of Medicine holds among systematic works upon general medicine; and this rank it will continue to hold till another Helmholtz, or another Donders shall arise, and to a wondering and admiring world present another mechanism or another master-key, that shall again revolutionize the science of ophthalmology, and require its literature to be re-written.—*St. Louis Med. Archives*, Aug. 1869.

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CLINICS.

CLINICAL LECTURE.

Clinical Observations on Lithotomy, and on Certain Cases of Enlarged Prostate.—By Sir WILLIAM FERGUSSON, F.R.S., &c.

Although probably no subject in surgery has been written about so voluminously as lithotomy, it has often appeared to me that many things associated with this operation have been carelessly passed over, or so slightly noticed that, practically, they may be said to have escaped observation. Supposing this statement to be correct, I am disposed to account for it by the circumstance that the most experienced lithotomists have not always been the best or most comprehensive writers on the subject. The reticence of Rau and of Cheselden is an appropriate illustration; and treatises on the operation have been written by many who have had such limited personal experience that important practical matters have often been overlooked, while things having no existence have often been dwelt upon as if of common occurrence. As an illustration of this last statement, I may refer to the so-called infiltration of urine alleged to be so common after this operation. Such an event, if it ever occurs, is exceedingly rare, and I have never seen an example of the kind. An erysipelatous inflammation, with considerable infiltration of serum, lymph, and pus, has occasionally been mistaken for this state, I believe. I have often seen instances of great accumulation of urine in the bladder after lithotomy, without the smallest infiltration.

As my personal experience in lithotomy extends to nearly two hundred cases. besides numerous operations I have witnessed in the hands of others, I trust that it may not be deemed presumptuous on my part if, claiming some authority on the subject, I venture to record some points which have been little noticed, if at all, by the gene-

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rality of writers on this absorbing subject. I am the more induced to do so, because I have reason to think that some observations on lithotomy in children, made by me in my lectures at the College of Surgeons in 1864, have had good effect. What I then stated was the result of much thought and considerable individual experience. The distance of the neck of the bladder from the perineum, the ease with which the membranous portion of the urethra may be torn across, and the facility with which the prostate and the neck of the bladder may be thereafter pushed upwards and backwards, were particularly dwelt upon; and a seemingly correct explanation, as I hope, was given of the frequency of not finding the stone in this operation, as also regarding the conclusion that stone had not actually been present in such cases—the real fact being that the operator had failed to reach the bladder. More mistakes of this kind have been made on children than on adults, and experience has convinced me that the difficulties and mechanical dangers are actually greater in children than in the adult. On the occasion referred to, I pointed out the common error of supposing that because lithotomy is comparatively so successful in its results in children, it is easy of performance in similar proportion. Such however is, in my opinion, not the case; and youth, with the strong natural disposition to reparation of wounds in early years, are the principal reasons for the happy results of this operation on patients under the age of puberty.

In my experience I have learned something more about the prostate than is usually stated in books about lithotomy, or about that organ itself. Operative surgery and surgical pathology have been largely taught by the pure anatomist, who has had little experience in either subject; and there has been on that account, in my estimation, a large amount of questionable doctrine laid down for the guidance of the practical surgeon. He may, indeed, be years in practice before he can, by thinking for himself, get rid of what I am often disposed to call dissecting-room surgery. I look back with amazement at the amount of writing and so-called instruction as to the limit or want of limit of incisions in the prostate in lithotomy. The healthy prostate, such as it may be considered between puberty and fifty years of age, has usually been taken as the standard of size. In accordance with theories of the teacher or author, a limited incision has been the favourite with one, whilst a free wound through the whole substance has been inculcated by the other. Yet lithotomy is more rarely required during the period referred to than at an earlier or later date. In two-thirds of the cases for this operation the prostate is either below or above the size most generally indicated in these speculations. In early years there can be no doubt that it is either cut or torn throughout; but in advanced years it may be doubted if it ever is either torn or divided entirely, excepting in rare instances, even by those who profess to use the knife freely in this part of the operation. Without proposing at present to discuss the question of free or limited incisions, I am desirous of drawing attention to the circumstance that the lithotomist often deals with the prostate in old men under circumstances very different from those under which it is seen by the pathologist or treated in ordinary practice. The pathologist and practitioner usually look upon the enlargement as a whole, or perhaps with reference to the special enlargement of the middle lobe. The one looks to the appearance of the enlarged parts; the other thinks of the effects of these upon micturition, or how, where there is much irritation associated with the condition, he can best and most readily give his patient relief by catheter or otherwise.

Now, although most formidable cases of stone are often met with in old age without any marked enlargement or change in the prostate, it frequently happens that the lithotomist finds the gland enlarged, and in the ordinary lateral operation his knife, finger, and instruments, pass through the part where enlargement is almost invariably greatest—viz., the lateral lobe. In the normal state of the prostate, the firm fibrous structure, as usually seen by the anatomist, can be readily appreciated. Even when there is enlargement, the firm fibrous character may still seem predominant. But in many instances, as the forefinger passes towards the bladder, the sensation is as if its point glided through several rounded bodies in the substance of the gland, which are but slenderly in contact with each other. It is seldom that the pathologist takes this route in examining or displaying the gland, and so perhaps little has been said about this condition. For my own part, although, like others, familiar with the condition, I had never heard any reference to it in association with lithotomy, and it was not until I had some considerable experience in this operation that I perceived the great importance of the fortuitous combination. Repeatedly I had been conscious, during a succession of operations, of feeling, and often, too, of seeing, this condition. The feeling may be easily understood, but seeing can only be appreciated after explanation. When the stone is being extracted, within the grasp of the forceps, there is often considerable resistance, even when the knife and forefinger have been freely used to give ready passage to and from the bladder. In some instances the stone, whilst all but through the wound, seems to be held *in situ*. If at this time the operator looks carefully, particularly on pushing the skin and the margin of the wound a little aside, he will see some tissue or substance between the blades in the space between the hinge and stone. With a slight pressure of the point of the finger this object will disappear from between the blades, and extraction will then seem comparatively easy. This is in reality one or more of the lobules referred to. It has not been grasped between the blades in seizing the stone, but has slipped into the space, as the forceps and stone have been drawn outwards. On such occasions I was glad to let the substance remain without further notice, and I confess to the fear that by referring specially to what I had noticed I might be deemed to have used unwarrantable liberties with the proatate. After repeated experience of this sort, it occurred to me that the propriety of leaving such loosened masses was questionable; and at last, on a tempting occasion, I seized, after the extraction, one or more of these bodies, and partly tore and partly cut them away. To my great delight, no evil followed, and the patient, about seventy-five years old, made a most satisfactory recovery, having no special symptoms afterwards.

In 1848, I exhibited specimens of this kind at the Pathological Society of London, and not long after heard whispers about rough and improper proceedings in lithotomy—coming chiefly, or rather solely, from those who had rarely, if ever, performed the operation. Criticism of the kind was almost enough to deter from similar pathological information, but I have since followed the practice repeatedly whenever it seemed to me needful, and I have never had occasion to regret doing so. The subject has recently been brought under my notice in a peculiarly interesting manner. During lithotomy on a patient nearly eighty years of age, in whose case my anxiety was special, I recognized this condition of the prostate. There was no peculiarity in the operation, but in extraction I recognized the hitch above referred to. When the stone was extracted I turned my attention to the lower part of the prostate, and found it so loose already that I accomplished its enucleation with the point of the forefinger of my left hand, with as much readiness almost as if it had been a stone lying loose in the left lobe of the prostate. The circumstances were peculiar, perhaps unprecedented in the history of lithotomy, and I drew the special attention of a professional brother, a near relation of the patient, who was present, to the circumstance. I felt convinced at the time that, whatever might be the result, I did the best for the patient, although his condition was critical in the extreme, and the operation was deemed a last resource. His recovery was slow, owing to previous exhaustion, but there never has been any irritation in the prostate. I do not feel at liberty to mention all the features and history of this case, but I pledge my word and name, for what may be their value, that it is worthy of being a precedent case.

The thought of being of service to any future sufferer, or any professional brother, induces me to put such experience on record in a manner more forcible than heretofore. The interests of patients and of surgeons are alike involved in these observations; and there are points or questions connected with them which, in my estimation, deserve attention from all engaged in the department of surgery to which the above remarks relate. In many cases of stone in the bladder the distress of the patient is plainly attributable to this cause; but occasionally the presence of stone produces so little irritation that its discovery is a matter almost of chance. Often, however, enlargement of the prostate gives rise to most, perhaps all, of the symptoms and sufferings of stone. When stone is combined with enlarged prostate, who can say from which cause the distress is greatest? So if it happens that the surgeon is called upon to relieve his patient from stone, and finds an enlarged prostate at the same time, why should he not, in extracting the stone, when it seems in his power, as in the cases above referred to, take away a superfluous portion of the prostate at the same time? The masses alluded to seem like adenoid tumours in the original substance of the prostate; their removal may be deemed a relief, and a possible solution of the distress of enlarged prostate; and as the entire wound in lithotomy most generally closes by granulation, the very removal of such wellnigh isolated masses will leave less surface for inflammation, suppuration, and granulation. If allowed to remain, it is not likely that they will adhere to their former site by immediate union; if they do not, a larger surface must be exposed to the irritating influence of urine, and a double suppurating and granulating surface must be the result.

But without speculating on such matters, I hasten to enunciate the conclusion at which this paper aims. There is a certain timidity in the practice of surgery which may in many respects be deemed becoming; and precedents are often as much prized among us as with practitioners in law. There would, however, be no progress unless some one from time to time stepped out of the accredited course; and so, with such authority as I can humbly claim, I have thus ventured to put on record what some of my professional brethren may have hesitated to do, from a fear that they have been guilty, in their operations, of perpetrating some rough mechanism not in accordance with that nicety of manipulation which is thought so essential in the performance of the master handiwork in surgery—lithotomy.—Lancet, Jan. 1, 1870.

HOSPITAL NOTES AND GLEANINGS.

Injury of the Left Eye from Foreign Body; twenty-six years afterwards Sympathetic Inflammation in Right; extirpation of the injured Eye, followed by very rapid recovery of the other.—The following case is of special interest in two respects: first, on account of the length of time which elapsed between the injury of the left eye and the sympathetic mischief in the other; and, secondly, the great and rapid improvement which followed the excision of the injured eye.

J. K., aged forty-two, ironfounder, applied at the Royal London Ophthalmic Hospital, Moorfields, on March 2d, 1869. The left eye had been lost twenty-six years ago, through an injury from a piece of metal. The globe is now shrunk to about a quarter of the normal size, and is very painful on pressure. The right eye remained perfectly well after the accident, until 1860, when it was attacked with iritis, for which an iridectomy was performed at that time; it being, however, deemed unadvisable to do anything to the left eye. Since the iridectomy in 1860, he has been able to follow his occupation up to Christmas (1868). when the right eye again became inflamed, and its sight gradually failed more and more.

On March 2d, 1869, the right eye presented the following symptoms: The eyetension is normal, the field of vision complete, but the sight so much impaired that he cannot decipher letters of No. 20 of Jaeger's test-types, but only see their black outline. The cornea is somewhat hazy, the iris inflamed, the pupil clouded, and with the ophthalmoscope hardly any reflex could be obtained from the fundus. The left eye had become irritable and painful about three weeks before, and was very *tender to the touch.* Atropia drops and warm fomentations were prescribed; but as the condition of the right eye was but little improved, the extirpation of the left was strongly urged by Mr. Wells, and the patient submitted to its removal on March 19th. A piece of iron was found in it, firmly imbedded in a mass of exudation-matter (on the inner side of the sclerotic), in the centre of a firm, fibrous cord, which appeared to be the shrunken and disorganized retina.

March 23d.—The right eye has improved so much since the extirpation of the other four days ago, that the patient is now able to read words of Jaeger 16. The inflammatory symptoms have greatly subsided. The cornea and pupil are clearer. There is still, however, but little reflex from the fundus.

30th.—Read words of Jaeger 10. The refracting media are much clearer, and the outline of the optic disk can be distinctly seen with the ophthalmoscope.

The patient ceased to attend the hospital after this date, but returned home to Yorkshire. He writes, however, in the middle of October, that his right eye is strong and well, and its sight so much improved, that he is able to follow his employment as superintendent of an iron forge.

Clinical Remarks by Mr. Wells.—Injuries from foreign bodies, *e. g.*, splinters of steel, glass, gun-caps, &c., which have become lodged within the eye, are a very frequent cause of sympathetic mischief. Inflammation of the iris, ciliary body, and choroid may supervene upon the injury, producing subsequently atrophy of the eyeball, which may shrink down to a small shrivelled stump. But even then the danger of sympathetic inflammation in the other eye, if this has hitherto escaped, is not past; for these stumps, which contain a foreign body, are a source of constant risk as long as they *remain painful to the touch*, and show signs of irritability. Many years may elapse after the injury, and the wounded eye be free from all inflammation, and be perfectly quiescent, when suddenly it becomes irritable, and symptoms of sympathetic irritation or inflammation show themselves in the other. In such cases the only remedy is the immediate extirpation of the injured eyeball; indeed, it is wiser to remove it at once after the injury, if its sight is lost, or very greatly and irremediably impaired, more especially if a foreign body is lodged deeply within the eye, or the patient resides at a distance from medical aid, so that a careful watch cannot be kept over him, and the first symptoms of sympathetic mischief at once detected.—Lancet, Dec. 18, 1869.

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Croup; Tracheotomy; Death.—The following case is of unusual interest. The history points in the first place to a long and severe attack of hooping-cough, which commenced before the child was twelve months old, and probably produced part of the collapse of the lung, which was found to exist after death. The spasmodic attacks from which the child suffered for two years are peculiar, and might be supposed to have had some influence on the present attack, but the chloroform administered as an anti-spasmodic did not seem to effect any change in the symptoms. Again, the tube which was passed into the trachea was found after death to have detached and broken off the false membrane from the mucous surface of the trachea and pushed it aside, so as to permit the passage of a limited quantity of air by an indirect route to the orifice of the tube. This accident, no doubt, hastened the death of the child; still, it can scarcely be believed that it materially affected the chance of the child's recovery, when we consider the extensive exudation of false membrane in the trachea and bronchi, and the very general collapse and emphysema of the lungs.

Alice G., aged 3, was admitted into the Middlesex Hospital, under the care of Dr. Goodfellow, a little after midday on Oct. 7. The features were almost livid, the respiration extremely difficult, the sternum being pulled in with each inspiration, and the pulse uncountable. It seems that when eight months old she was seized with hooping-cough, which continued eleven months. About a year ago she was observed to awake frequently with a shrill cry, accompanied with a crowing noise and difficulty of breathing. These attacks occurred with sometimes a week's intermission. She was able, after the attack, to be up and play with other children. She had suffered for two years from ascarides. Tracheotomy was performed by Mr. De Morgan at half-past one, inhalation of chloroform having been tried without any apparent result, and followed by speedy relief. The face was no longer dusky, the pulse could now be counted, but was still quick (120), and the patient began to sleep quietly at intervals. Carbolic acid, one part in fifty, was ordered for inhalation by means of the steam-pipe and curtains, and equal parts of dilute acetic acid and water, to be used with a feather in cleaning out the tube. Linseed meal and mustard cataplasms were also put alternately to the back and front of the chest. On the following morning the child remained in much the same state; she had slept at intervals, and taken a good deal of milk; her pulse was still (9 A. M.) quick, her respiration 48. She was ordered a powder containing half a grain of subchloride of mercury and a tenth of a grain of tartrate of antimony, to be taken immediately, and a mixture of squills, nitric ether in haust. ammon. acet. every four hours. The little patient, however, did not seem to derive any benefit from these remedies, and towards evening her respiration became again affected, the surface of her body became more and more dusky, and she died in convulsions at half-past six o'clock.

The post-mortem examination was made by Dr. John Murray, nineteen hours afterwards. The fauces were reddened, but devoid of false membrane. The under-surface of the epiglottis and the lining membrane of the whole respiratory tract below, as far as the primary divisions of the bronchi, was more or less covered with false membrane. In moderately firm patches as far as the first ring of the trachea, from this downwards to the primary divisions of the bronchi it formed a complete cast, thick and firmly adherent to the raw and deeply injected mucous membrane. But for about half an inch above and below the opening made into the trachea during life, the false membrane was detached and pushed away. At the lower end it had broken, and here there was a communication between the canal of the trachea and the tracheotomy tube. The false membrane about the commencement of the primary branches of the bronchi became looser and purulent, and more and more so as it extended to the minute bronchi, some of which became choked up. At the bifurcation of two moderately large bronchial tubes in the upper lobe of the left lung was found a piece of membrane forming a plug, and preventing the entrance of air. Behind this the lung tissue was in a state of considerable collapse. But this was not the only collapsed lung, for throughout the whole organ were found numerous portions of collapsed tissue of variable size. The intervening lung was in many places emphysematous. There was an apoplectic clot in the lower border of the left upper lobe of the lung, and in the right apex a hard, mostly cretaceous mass, the size of a filbert. The lung was here firmly adherent to the walls of the chest. Both lower lobes were also firmly adherent. There was slight pericardial effusion, and over the base of the heart was a thin layer of lymph. The other organs were healthy.—Med. Times and Gaz., Nov. 13, 1869.

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Aneurism of Popliteal Artery; Failure of Treatment by Flexion and Compression; Ligature of Femoral Artery; Suppuration of Sac; Amputation of Thigh; Recovery.—R. W., widow, aged 40, was admitted into St. Bartholomew's Hospital, Chatham, under care of Mr. Nankivell, July 4, 1868, with a popliteal aneurism in the left leg, the size of a hen's egg, and with strong pulsation. The woman had not noticed the swelling for more than two months. There was no history of any blow, but the patient herself attributed the mischief to her practice of straining up on tiptoe to adjust linen on a clothes-line. It caused her considerable pain, especially upon any unusual exertion, as walking uphill, and had already acquired such dimensions as to increase the circumference of the affected limb over its fellow by an inch and a half.

The limb was at once flexed, and kept in that position during twenty-five days, tourniquets being kept on the femoral artery during part of the time; but the pain continuing, and œdema of the foot and leg, with swelling of the thigh, coming on, the woman refused to submit to the treatment longer. On July 30, therefore, firm compression over the femoral was substituted, the whole limb being evenly bandaged. A week later (August 5), the tumour still increasing in size and pulsating as strongly as ever, the femoral artery was tied in the usual situation, with the effect of considerably reducing the size of the tumour, the vitality of the foot and leg remaining good. The thread came away on the fourteenth day (August 9), and the limb then measured an inch and a half less than at the date of the ligature; but even now the circumference over the centre of the tumour was four and a half inches greater than at the corresponding point of the sound limb. Ten days later (August 29) severe fever, heat, redness, and tenderness over the aneurism, with free suppuration from the track of the ligature, proclaimed that inflammation of the sac had set in. Effervescent salines were prescribed, and evaporating lotions applied to the tumour, but the symptoms increased in severity, fluctuation became well marked in the swelling, and on September 13, the discharge being now abundant and sanious, a tourniquet was applied over the femoral artery at the groin, and free incisions made into the tumour, releasing five ounces of sanious pus, to the patient's great relief. Poultices were then applied, and carbolic acid used as an injection to the wound.

Next day the patient was in a very weak condition, an erysipelatous blush covered the back part of the thigh, the pulse was 120 and feeble, and eight ounces of fetid pus escaped from the wound on the removal of the dressings. The erysipelatous skin was painted with a strong solution of nitrate of silver, and wine and ammonia freely given.

Two days later (September 17), the patient having rallied somewhat, Mr. Nankivell proceeded to amputate the limb. This he did by the circular method through the upper third of the thigh. There was free bleeding from the enlarged vessels, but the flaps and bone at the point of division seemed healthy. Stimulants were continued on the return of the patient to the ward, and kept up during some days. The main ligature came away on the twelfth day, and from thence the woman made good progress towards recovery, in spite of the delay occasioned by the formation of a large bed-sore. She went out with the stump quite healed on December 3.

Examination of the amputated limb revealed a foul sloughy cavity, the size of an orange, at the upper part of the popliteal space, lined with a rough "pyogenic" membrane, and filled with horribly fetid pus. The suppuration had extended upwards along the track of the obliterated artery. The popliteal surface of the femur was rough, and denuded of its periosteum. —Med. Times and Gaz., Nov. 13, 1869.

MEDICAL NEWS.

DOMESTIC INTELLIGENCE.

On the Use of Bromide of Potassium in Convulsions, &c. — By JOHN MERRITT, M. D., Newcastle, Delaware.

J. S., aged eight days. Had convulsions which resisted the usual remedies. The attacks were fifteen or twenty times daily. Grains 2 bromide of potassium were given every four hours; the convulsions diminished in frequency and force after the first, and entirely ceased after the second dose. Child now healthy at nine months old.

Nothing could be discovered to cause these attacks, except the bones of the head projected at least one-fourth of an inch over each other, which I thought might produce the effect witnessed by pressure, but the bones did not regain their proper position until some days after the convulsions ceased.

Mr. R., aged 30. Alcoholism with convulsions; gave grains 20 bromide of potassium every hour; convulsions ceased after first dose, reproduced in 30 days from original cause; same treatment with same results; patient well 3 months after treatment.

Mr. K., aged 40. Alcoholism; no sleep for 72 hours; gave ʒj bromide of potassium; saw patient 10 hours after first and only dose; had slept and took nourishment; was quite well; medicine continued in 20 gr. doses three times daily.

Mr. B., aged 65. Alcoholism with convulsions; reported to have had 100 attacks before I saw him. I found the convulsions occurring so frequently that there was scarcely any intermission; he seemed to all present, a hopeless case; apoplectic symptoms existed; total unconsciousness; gave grains 20 bromide of potassium every half hour (forced down with much difficulty); after the first dose, longer intermissions between attacks; gradual improvement, and after the fourth dose convulsions ceased; patient slept for several hours. Medicine continued for three days; patient restored to his usual health.

This is one of the most remarkable cases, as far as the effect of remedies is concerned, which has fallen into my hands. This patient's recovery seemed impossible. After the first dose of the bromide, when I saw the attacks becoming less frequent, did not feel any encouragement, but after the second dose consciousness was fully restored between the attacks, the apoplectic symptoms subsiding. I then, perhaps presumptuously, assured the friends that he would recover.

K., aged 8 months. Sleeplessness caused by long use of opium. This child had not slept more than 10 minutes at any one time for six days, the pupils of eyes dilated, irritable. Gave grains 5 bromide of potassium every three hours, which increased sleep, but not until it had been continued for three days, child now well.

Mrs. S., aged 35. Phthisis pulmonalis; became wakeful; had not slept for 72 hours; bromide of potassium grains 20 dose every three hours, induced sleep: other opiates had failed.

I have prescribed this remedy in a large number of cases requiring opiates, and am of the opinion that it, properly given, is almost as certain as the preparations of opium, whilst it is not followed by the often unpleasant and inconvenient consequences which so often accompany the latter drug.

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Poisonous Effects from the Instillation of Atropia in the Eye of a Child.—Dr. J. J. Chisholm records (Baltimore Medical Journal, Jan. 1870) the following example of this:—

"Miss H., four years old, had had the left eye injured, one year since, by a scissors, which had perforated cornea, iris, and lens. When first seen, hydrophthalmia had supervened, accompanied by a contracted and adherent pupil, with still, however, a clear cornea and bright-coloured iris. A drop of atropia solution, 4 grains to ℥j, was carefully placed between the lids for the purpose of soothing pains complained of in the eye. An excessive secretion from the lachrymal gland was excited by the presence of the drop, and, after a moment, a tear-drop ran down the cheek of the little patient. The child caught the descending drop upon the end of the finger, and was observed by the mother to put the finger afterwards in her mouth. In less than an hour after the atropia had been used, the child complained of great thirst, dryness of fauces, hot suffused face, with quick excited pulse. The face remained scarlet for two hours, when all the symptoms gradually commenced to wear off. The parent believed the child attacked with scarlet fever, a disease with the appearance of which she was familiar. Allowing that the drop of the atropia solution, $\frac{1}{120}$ part of a grain, had been again diluted with an equal bulk of lachrymal secretion, and that of the portion wetting the cheek one-half had been caught upon the finger and put into the mouth, the dose taken could not be greater than the $\frac{1}{540}$ part of a grain of the sulphate of atropia, and the poisonous symptoms were promptly developed from this infinitesimal particle."

[Is it not probable that a portion of the atropia, mixed with the tears, passed into the puncta, thence through the lachrymal passage down the posterior nares, and was swallowed, and that the patient thus received more of the atropia than the writer supposes? It is in the way pointed out that poisoning by atropia, instilled into the eye, is usually, we conceive, effected; though sometimes the solution runs down the face and passes between the lips and into the mouth, and is swallowed. Greater caution than is usually taken, we think, should be observed when applying atropia to the eyes, especially in children.—Ed.]

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Transfusion of Blood.—Dr. F. L Wadsworth reports (Chicago Med. Journ., Dec. 1869) the following experiment made by Dr. Freer before the class at Rush Medical College, to illustrate the function of the red blood corpuscles in their immediate relations to respiration and the maintenance of vitality, and to demonstrate the fact that fibrin takes no immediate part in restoration from exhaustive hemorrhage, serum serving as the vehicle of the vitalizing corpuscle, and that transfusion with defibrinated blood may be performed somewhat leisurely and with impunity, care being taken that the instruments used are nicely adapted for the exclusion of air from the vessels.

A dog, weighing fourteen pounds, "was anæsthetized, the left carotid artery and jugular veins were exposed, a canula inserted into each, and secured by ligatures. Sufficient time was then allowed for the animal to recover from the effects of the anæsthetic, when the stopcock of the canula inserted into the artery was turned, and the blood allowed to flow until sixteen ounces were extracted and the force of the heart's pulsations so reduced that no more could be drawn from the artery with the animal lying horizontally upon his right side. Respiration now gave evidence of syncope, the limbs were rigid, the jaws set, death was impendent.

"Meantime, a portion of the blood drawn had been defibrinated and kept at its normal temperature, by a warm water bath. It was now (twenty minutes from the time it commenced to flow from the artery) passed through the canula, by means of a syringe, into the jugular vein. In this manner seven ounces of defibrinated blood were returned to the system of the animal.

"On the introduction of the first ounce there was observed decided evidence of increased vigor. During the injection of the second ounce, by some defect in the apparatus, air was admitted into the vein. Instantly the animal succumbed; a tremor affected his entire system, and respiration ceased. Prof. Freer remarked that the animal's life had been sacrificed by the accident; but by convulsive efforts he regained respiration, and in two or three minutes the effects of the occurrence had disappeared. When the seventh ounce had been introduced there remained little, if any, disturbance of respiration, the heart's vigor was nearly restored, the muscular spasm had subsided, and there was apparently no more disturbance of the system than usually occurs at this period after the administration of chloroform for any ordinary operation.

"In eight minutes after the blood had been returned the animal raised his head and observed intelligently; and twelve minutes thereafter he voluntarily raised himself and walked across the room, some twelve or fifteen feet. The day following he was sprightly and playful, and the second day after the operation he travelled nearly a quarter of a mile without any evidence of fatigue whatever."

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Medical College Convention.—To the Trustees and Faculties of the Medical College of the United States:—

The undersigned Committee, in accordance with the instructions of the Convention of Delegates from Medical Colleges, held in Cincinnati in May, 1866, respectfully and earnestly invite you to send Delegates to a convention to be held in the city of Washington on the *Friday* preceding the *first* Tuesday in May, 1870, for the purpose of considering all subjects connected with Medical College education, and procuring the co-operation of the schools in carrying out a uniform system of Medical instruction. It is very desirable that every regular Medical College in this country should be represented in the Convention.

N. S. Davis, S. D. Gross, George C. Blackman, F. Donaldson, Committee.

Chicago, Ill., Dec. 22, 1869.

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New Medical Journals.—We have before us three new candidates for professional favour.

1st. The "Oregon Medical and Surgical Reporter, edited by E.R. Fiske, M.D., Prof of Theory and Practice, Willamette University." The first number of this was published at Salem, Oregon, in November of last year. It is announced that it is to appear monthly, each number to contain 32 pages of reading matter.

2d. "The Baltimore Medical Journal, edited by E. Lloyd Howard, M.D., and T. S. Latimer, M D." The first number of this journal was issued in January of this year, it is also to appear monthly. The number before us contains 64 pages of reading matter.

3d. "The European Medical News," a journal devoted to selected Translations from the medical, surgical, and scientific periodicals of the Continent of Europe, appearing every alternate month. Edited by Robert Stone, M.D., New Haven, Conn. The first number was issued last month, and contains 56 double column pages of reading matter.

In addition to these we may state that "The Western Journal of Medicine," which was ably conducted by Prof. Parvin, appeared last month under the title of "The American Practitioner;" and is to be issued monthly under the editorship of Profs. David W. Yandell and Theophilus Parvin.

We wish them all success, and take pleasure in placing them on our list of exchanges.

FOREIGN INTELLIGENCE.

Death from Chloroform.—We have to add three more to the long list of deaths from chloroform. 1. A young man died December 29th last, on the operating table at Middlesex Hospital while inhaling chloroform preparatory to an operation. He had taken chloroform a month before without any untoward symptom. All the usual means for resuscitation were perseveringly resorted to without avail. At the autopsy made next day, twenty-four hours after death, besides general congestion of the viscera, the heart was found to be the seat of somewhat recent endocarditis, shown by roughening of the mitral and aortic valves and thickening of the chordæ tendineæ. The substance of the wall of the left ventricle was also found to be extensively diseased, the striæ being hardly visible in some parts through the large amount of granular degeneration. The rigor mortis was very slight.—Med. Times and Gaz., January 1, 1870.

2. Dr. Monckton gave an account to the South Eastern Branch, West Kent District, of a case which had proved fatal at the West Kent General Hospital while under chloroform. The patient was an anæmic woman, aged 39, from whose gums and lower jaw malignant fungous growths were being removed by the galvanic cautery; nitric acid, perchloride of iron, and the *écraseur*, having previously failed. After being very

moderately under the influence of the anæsthetic, administered by Dr. Skinner's flannel mask, for about thirteen minutes, on the third introduction of the heated wire she instantaneously expired. The powerful battery actually at work by her side was applied to the chest without loss of time; mouth-to-mouth insufflation was practised, and Silvester's method also; but the patient was clearly dead from the first moment. The *post-mortem* examination revealed a large goitre outside the neck, bloody mucus occupying the larynx and summit of the trachea, the heart cavities all empty, and the lungs pallid and emphysematous. The heart and goitrous tumour were submitted to the meeting. Syncopal asphyxia, to which chloroform had been contributory, was concluded to have been the cause of death. Dr. Monckton suggested the following points among others: 1. Any hindrances to free expiration deserved more consideration even than the organic condition of the heart. Chloroform might be administered more confidently in valvular disease, he considered, than in extensive emphysema, or obstructed air-passages. Dilated lungs especially were capable of receiving and detaining an immense dose of vapour, and incapable of expelling it. 2. He inferred from experiments on rabbits, which were detailed, that galvanism was of little use in case of accidents really due to chloroform, except, perhaps, by exciting the action of the diaphragm. 3. The same experiments had compelled him to believe that direct paralysis of the heart, as usually understood, did not result from chloroform. The left cavities received the vapour-charged blood directly from the lungs, and these were always contracted, while the right heart was greatly engorged, and the lungs very empty and retracted. The appearances in the chest of a rabbit, rapidly killed by chloroform, were similar to those described by Dr. George Johnson as characterizing choleraic collapse, and suggested the opinion that, either by direct irritation of the vapour, or by induced blood-change, the pulmonary capillaries were contracted, shutting the blood back upon the heart, as by a sudden ligature of the pulmonary artery.—Brit. Med. Journ., Dec. 11, 1869.

3. Another death from chloroform occurred in the Lincoln County Hospital on the 23d. The patient was a boy aged fourteen, the subject of necrosis of the tibia. He had taken chloroform safely on a former occasion. Most of the surgical staff of the Hospital were present. The boy had become insensible, and the operation had been commenced when he was seized with vomiting. After vomiting one or two minutes, he became livid, his breathing ceased, and his pulse was imperceptible. In spite of the usual measures, death followed. The *post mortem* examination did not reveal any peculiarity excepting enlargement of the liver. Mr. Hett, the House-Surgeon, from whose evidence at the inquest we have taken the above facts, said that he attributed death to failure of the heart's action. This is said to have been the first death from chloroform which has occurred at the Lincoln Hospital. —British Medical Journal, Jan. 8, 1870.

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Therapeutic Note on Chloral.—Sir J. Y. Simpson gives (Med. Times and Gazette, January 1, 1870) a very interesting account of his experience with chloral. He thinks that this remedy will prove of immense value in the practice of medicine, surgery, and midwifery.

"Hitherto," he states, "I have principally employed it as an hypnotic and anodyne. In sufficient doses I have found it, as a general law, as sure a producer of sleep and soother of pain as opium or any of its preparations. It is usually swifter in the induction of its narcotism, more tranquil in its action, and more prolonged in its effects than opiates are when taken as hypnotics; but above all, it seems in a great measure, free from some of the minor drawbacks and disagreeable accompaniments produced by a full and large dose of opium. In this respect it appears to me to fulfil successfully the indications which I predicted in the extract above given, of being a narcotic as powerful, and indeed more powerful, than opium, 'and yet without either its direct constipating effects, or its indirect tendency to excite subsequent nausea, vomiting, etc.' The sleep induced by a full dose of it steals on without any premonitory symptoms. It is usually deeper, and yet more quiet and calm, than that produced by opium; and it does not leave subsequently the thirst, dry throat and tongue, disturbance of stomach and appetite, and languor of mind as well as body, which most persons unaccustomed to the use of opium commonly feel after a deep and narcotic dose of that drug.

"Ever and anon cases are well known to occur in practice in which patients declare their inability to take opium in any form without suffering severely from nausea, faintness, restlessness, and other evil effects. In several such cases I have now used chloral as an hypnotic with perfect success. A patient here at present from New York assures me that the preparations of opium and other vegetable anodynes have always acted upon her as poisons, and without producing their usual hypnotic effects. 'Such,' she writes me, 'being my experience of anodynes, I was unwilling, as you remember, to take chloral, and hoped nothing whatever from it. It was administered to me in two half-doses [thirty grains each]; the first dose, taken in the daytime, with light in the room and my people walking about, did not put me to sleep, but it soothed and calmed me completely. The second dose, given at night, was followed by nearly four hours of natural and refreshing sleep. I felt neither giddiness nor heaviness on walking, and neither then nor later did I experience any sensation of nausea as after other anodynes.'

"Two or three weeks ago I had under my care an old patient, a lady of great sensitiveness and intellectual power, from one of the midland counties of England. When last in Edinburgh she was the subject of a slight operation, and twice took a dose of chloral at night to induce rest. She slept under it quietly and refreshingly, far beyond her usual breakfast hour. Opium, henbane, and other anodynes had, when used, generally induced in her disturbed sleep, occasional sleep-talking, and sometimes somnambulism. A few days before coming on this last occasion to Edinburgh, she had a conversation with her mother regarding the kind of monument which they should erect over the grave of her father, who died two or three months since. That same day she had travelled up from Wales, felt ill, and had given to her a dose of henbane towards bedtime, with the hope of producing rest. In the middle of the night her husband was awoke by the ringing of his door bell, a shower of small stones launched against his bedroom window, and the dog barking within. On rushing down and opening the door he found his wife, whom he believed to be in bed, standing outside. The henbane draught had produced a fit of sleep walking. After her husband and she had fallen asleep she had risen, dressed herself in her day clothes over her night clothes, removing for that purpose her bonnet and muff out of their special receptacles, and, in the middle of a dark and wet night, had walked off to a distance of two miles. She awoke with her left hand holding her two gloves within her muff, and the right hand grasping the cold iron handle of the inner gate of the churchyard in which her father had recently been buried. After using the chloral she expressed to me great satisfaction at the idea that she had now a medicine which seemed to produce nothing but a tranquil sleep, quite different from the disturbing effects of the narcotics which she had previously taken; and two days ago I saw an order from England at the apothecary's for several doses to be forwarded to her.

"Sometimes chloral produces its hypnotic effects when opium, from its long-continued use, had ceased to do so. To a patient who has had daily morphia injected subcutaneously for some years for neuralgia of the side under the hands of different practitioners, my assistant, Dr. Bell, gave at my request a drachm dose of chloral. Latterly a grain of morphia has been injected daily with the effect of relieving the pain, but without producing sleep. She swallowed the dose of chloral early in the afternoon, and was asked to lie down in bed. I saw her in a quarter of an hour afterwards deeply asleep; and the lifting of one eyelid to look at the dilated pupil did not awaken her. She awoke out of the slumber free from her neuralgia.

"I am not aware of any special contra-indications to the employment of chloral when used for somniferous purposes. Even in head and chest affections, where I should have been chary of having recourse to opium as an hypnotic, I have employed chloral with perfect success. The contra-indications to opium offered by a tendency to constipation, etc., do not exist against chloral.

"Like all other remedies in the Pharmacopœia, it will no doubt occasionally fail to produce its desired effect; but as seldom so, perhaps, as most of them. In a few instances the sleep induced by it has been dreamy and hysterical, particularly when the patient was not kept in a state of perfect quietude; but these are rare exceptions to the general rule.

"In the present remarks I have spoken specially of the somniferous or hypnotic powers of chloral. I have used it for other purposes, but it is not my intention to dwell upon them at present. It will not fulfil all the many and almost endless indications for which opium is used in medicine; but I have seen enough to convince me that it will prove a very valuable anodyne in some cases of neuralgia, hysteralgia, dysmenorrhœa, pleurodynia, etc., and in the pains attendant upon cancer and acute local inflammations. In some cases of irritable bladder and chronic cystitis I have found it give the patient much longer and more perfect rest than large doses of opium. In several instances it has seemed to me, when given in small and repeated doses, to soothe down both acute and chronic cough with remarkable effect; and I have known it to relieve asthma. Lately in a young lady whom I saw in consultation with Dr. Taylor, suffering under a severe attack of congestive bronchitis with some hæmoptysis, and orthopnœa, a small dose (twenty grains) of chloral was given at night. 'She speedily fell asleep,' wrote Dr. Taylor to me the next day, 'and slept soundly until 4 A.M., when she sat forward in bed and coughed, but appeared to be only half awake. When I called in the morning at 10 30 she was still enjoying a most placid slumber. As I contrast,' Dr. Taylor adds, 'the distressed and audible breathing of last night with the tranquil sleep and improved state of the patient to day, I cannot help concluding that chloral has a directly sedative effect on the whole respiratory surfaces.'

"Occasionally I have exhibited chloral in continuous small doses for one, two, or more weeks in succession, and apparently with most marked benefit, particularly in cases of chorea, threatened or incipient insanity, etc. A patient from Illinois, who, for several years, has always regularly suffered excruciating spasmodic pain in the left iliac region, attended with some discharge, for eight days before menstruation began (she has disease of the fundus uteri and left Fallopian tube), has, during the last two periods, kept at bay this old and formidable suffering by taking chloral night and morning during the threatenings of it. She strongly assures me that formerly she had used very large doses of opium and other anodynes without any such favourable effect. I have found the parturient uterus to go on contracting regularly and strongly when the patient was so deeply asleep under chloral as to be only very imperfectly wakened up with the expulsive efforts of labour.

"The dose of chloral to an adult for an hypnotic which I have usually employed has varied from 50 to 60 grains; but 25 to 30 grains suffice in some patients. In a case of long-standing sleeplessness, and which has resisted great doses of opium, Indian hemp, etc., 120 grains failed to produce any effect. When used for anodyne and other medicinal purposes, a continuation of smaller doses—as 10 or 20 grains several times a day—is sufficient.

"In administering chloral I have given it only by the mouth and by enema; almost always as a draught. It is somewhat acrid and pungent to most palates, and hence requires to be diluted well with water, and to have added to it a large quantity of syrup."

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Amputation under Chloral.—M. Noir relates this case more as a warning than as an example for imitation, although he suggests that some of the symptoms which arose might have been due to the idiosyncrasy of the patient. The man, 64 years of age, was an inmate of the hospital at Brionde on account of osteosarcoma of the tibia, which caused him such excessive pain that he eagerly sought for amputation. With the view of allaying his suffering, four grammes of solid hydrate of chloral were given him, which at first induced great agitation and much nausea, then gave rise to such deep sleep and great subsequent relief, that it was determined to employ this substance as an anæsthetic next day during the operation. Accordingly five grammes were given, and in about two hours so deep a sleep followed that he was carried to the table and amputation performed without his making a movement or uttering a cry. Replaced in bed, still asleep, his body was observed to be very cold, and his pulse, which had been 120, became filiform and uncountable. He continued in a state of alarming coma until eleven and a half hours after the chloral had been administered. He then woke up in violent delirium, with vomiting and pain in the stomach. These symptoms continued for nearly eight hours, when they disappeared, leaving the patient in the extremest prostration. He was conscious, but could scarcely move or speak, and was ignorant of all that had passed. After some hours and a good night, though without sleep, all bad effects passed off.—Med. Times and Gaz., January 1, 1870, from Gaz. des Hôpitaux, Dec. 23, 1869.

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Hydrate of Chloral in Italy.—Professor Namias, the well-known surgeon of Venice, has just addressed to one of the medical societies of that city a relation of his experiments with hydrate of chloral at the clinique of Venice. M. Namias has never observed the occurrence of eschars in hypodermic injections of the substance when only one gramme was injected with double the quantity of distilled water. The effects have always been speedy and excellent. They were especially so in one case of suborbitary neuralgia, and in various cases of muscular rheumatism, thoracic hyperæsthesia, in phthisical patients, &c. M. Namias ascribes these beneficial results to the good quality of the chloral, prepared by Cioni. He has also tried the substance through the alimentary canal in doses of from eight to ten grammes a day, given in six or eight times, at intervals of two hours, and during several days consecutively. The effects were invariably excellent, and were unattended by arterial tension or undue frequency of pulse.—Lancet, Jan. 1, 1870.

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A temporary Tracheotomy in Operations involving the Cavity of the Mouth.—In number 47 of the *Ærtzliche Intelligenzblatt* for the present year, Prof. Nussbaum of Munich remarks, that there are three sources of danger in operations involving the cavity of the mouth, such as the extirpation of the superior maxilla, or of tumours springing from the base of the cranium, namely, 1. Suffocation from blood flowing into the larynx; 2. Pneumonia from small coagula of blood in the lungs; or, 3. Injury to the throat, and subsequent deep-seated abscesses in the cervical fascia, from the assiduous mopping-up of the blood during the operation. To obviate these dangers, he proposes a preliminary tracheotomy, and narrates a case in which he removed a large tumour (sarcoma) of the upper jaw, which had pushed the eye upwards, and extended deeply backwards and downwards into the throat. The patient was a country girl, aged 20, much weakened by repeated hemorrhages. He first opened the trachea, and introduced a silver canula, continued the inhalation of chloroform through this, closed the glottis and pharynx with four thicknesses of oiled linen, proceeded to remove the whole upper jaw and tumour, and then applied the actual cautery. Having washed out the mouth and plugged the cavity left by the operation, he took away the oiled lint and the trachea-tube, and closed both wounds. The patient breathed freely through the normal channel, and the whole operation seems to have been a complete success. Not a drop of blood entered the throat; and the operator was free from all fear of his patient's dying of suffocation.—Brit. Med. Journal, Dec. 25th, 1869.

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Ovariotomy, with Removal of the entire Uterus.—M. Pean exhibited to the Academy of Medicine, Dec. 7th, a patient who had had a very large cyst of the left ovary; the uterus, greatly hypertrophied, mounting up above the umbilicus, and containing a cyst, while a fibrous tumour occupied the right ovary, and a cyst the right tube. The existence of a movable fibrous tumour, independent of the cyst and of hypertrophy of the uterus, was recognized prior to the operation; but in what proportions these lesions existed could not be ascertained, by reason of the adhesions which united the various tumours to each other. Having exposed the ovarian cyst by a long incision, M. Péan commenced, as is his custom, its removal piecemeal (*morcelant*), employing his long cauterizing irons, heated to whiteness. Having in this way removed a notable portion of the cyst, he came upon the uterus, enormous in size, soft, fluctuating, and adherent on every side. The adhesions were very vascular, and any rupture of these gave rise to hemorrhage, which had to be arrested by heated irons. The only thing that seemed feasible was the removal of the diseased uterus at the same time with the other tumours. M. Péan would not cut through the cervix, as this was excessively hypertrophied, equalling a fist in size, but carried his incision through the vagina. He next passed a double thread by the abdominal wound through the vagina from before backwards, by means of which he practised two ligatures. That on the left side comprised the great ovarian cyst, and the other embraced all the portion of the vagina corresponding to the uterus, together with the right ovary and tube. An incision was made just above the ligatures, and the parts comprised were removed by a considerable amount of traction, the double pedicle thus formed being brought in contact with the abdominal parietes. This portion of the wound was not united, three caoutchouc tubes being inserted. The adhesions were too intimate to allow of the separation of the fundus of the cyst from the wall of the lesser pelvis. It was left *in situ*, but was spontaneously discharged on the thirtieth day, by which time solid adhesions had closed up the vaginal incision, without leaving any perforation where the ligatures had been. The recovery was complete, and when the patient was presented the operation had been performed three months.—Med. Times and Gaz., Dec. 18th, 1869.

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Chorea.—M. Perroud, Physician of the Hôtel Dieu of Lyons, has just applied, with much success, the ether spray to the spine of a girl of fifteen, suffering from chorea. Eleven sittings, at each of which between two and three ounces were used with Richardson's apparatus, were followed by complete cure. A second just as successful case occurred under the care of Dr. Maynet, also at Lyons, the patient being a lad of eighteen.—Lancet, Jan. 1, 1870.

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Prof. Bouillaud on the Differences between Inflammatory and Pyretic Diseases.—Prof. Bouillaud thus sums up his views on the differences betwen inflammatory and pyretic diseases:—

1. The excess of fibrin in the blood, in the purely inflammatory condition or process, which for a long time was named "inflammatory fever," proceeds from an *abnormal secretion* or *neoplasm* of the internal membrane of the blood apparatus. This neoplasm is similar to the one produced on the surface of an inflamed serous membrane, to the degree or according to the manner designated by Hunter an *adhesive inflammation.*

2. It is a portion of this neoplasm, or of this pseudo-membranous secretion, which deposits on the surface of the coagulum of blood obtained in the cases above stated—neo-membrane, to which the name of inflammatory clot has been given, and the chief constituent principle of which is fibrin.

3. Phlegmasia of the internal membrane of the circulatory apparatus, more or less generalized, and belonging to the so-called *adhesive* form is one of the fundamental conditions of that production of fibrin in excess, and of the pseudo-membrane of the blood in so-called *inflammatory* fever.—Lancet, Jan. 8. 1870.

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Antidote to Haschisch.—Prof. Polli, of Milan, states: "Experience has proved that infusions of coffee, of tea, and of cocoa, always increase the action of haschisch; so that if it is wished to accelerate or to augment its effect, it should be taken or administered in an aqueous infusion of one or other of these vegetable substances.

"Lemon-juice and vinegar, and, consequently, citric, malic, acetic, and tartaric acids, in aqueous solution, more or less diluted, arrest the effects of haschisch in a person who has taken it, and thus are competent to serve as real antidotes.

"It will then be useful in making a trial of haschisch, and especially in the treatment of certain nervous maladies by haschisch, in cases where one does not as yet know the susceptibility of the subject, to know that one has in the lemonades of these acids, more or less concentrated, powerful, and at the same time innocent, moderators of the nervine action of haschisch.

"I confess that it is not from my own personal experience that I have confidence in the preservative action of the vegetable acids against the injurious effects of haschisch; but solely from the experience of the Egyptians, who have assured me that it always succeeds with them, and from the testimony of Dr. Castelnuovo, who lived for a long time at Tunis, where he convinced himself of the antidotic value of lemon-juice and strong lemonades against haschisch." — Med. Press and Circular, Dec. 22, 1869.

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The Prophylactic Action of Copper in Cholera Epidemics.—At a recent meeting of the Clinical Society, it was stated by Dr. Clapton that his investigations on the effects of copper upon the system had elicited the remarkable fact that men engaged at the various copper-works in London always escaped cholera and choleraic diarrhœa during great epidemics. That such an immunity is really afforded by the action of this metal seems now to be a well-attested fact, since Dr. Clapton's statements have lately been confirmed by some statistics communicated by M. Burq to the French Academy of Sciences. M. Burq states that during the epidemic of 1865-66 in France, only 1 out of every 1270 workers in copper was attacked, the total number of individuals thus engaged being 37,000. With workers in iron and steel, on the other hand, 1 out of every 209 was attacked; and of those engaged on other metals than copper or iron, 1 out of 178.—Lancet, Nov. 6, 1869.

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The Perils of Fashion.—We are indebted to a lady correspondent for the correction of a mistake, or rather an omission, in our recent article on Tight-lacing. In ascribing the ungainly, feeble, and tottering walk of our modern fine ladies and their middle-class imitators to the decrepitude induced by tight-lacing, we omitted to mention another fashionable folly which assists in the production of this evil, and has also other sins of its own to answer for. The custom of wearing high boot-heels, and those too so much smaller than the actual heel of the wearer as to afford no solid support, but only a balancing-point, is a source of much mischief. In the first place, it throws the centre of gravity of the body so far forward that a free and gracefully erect carriage is impossible. Secondly, there being no firm support to the heel, ladies are very apt to twist the ankle suddenly by overbalancing themselves; and this is not only bad in itself, but the fear of its occurrence makes them assume a timid, mincing gait. And, thirdly, the effect of driving the foot constantly forward into the toe of the boot is to produce a very ugly and painful distortion of the great toe joint.

There is little need for wonder at the almost fierce contempt with which young men whose characters are at all above the lowest grades of conventional inanity regard the average "girl of the period." It cannot be denied that there is a significant correspondence between the æsthetic hideousness and the degrading effects on physical health which are produced by tight stays and crippling boots, and a certain mental and moral tone in female society of the present day, which is no less surprising than it is repulsive. The whole dress and carriage of our fashionable women, for several years past, has been modelling itself, with less and less concealment, upon the ideal furnished by Parisian *lorettes* of the consumptive Traviata type. It is not our business to set up as moral censors. But we may be excused if, for once in a way, we find it impossible to ignore the logical though repulsive consistency of the *grandes dames* and citizenesses who are willing to spoil their lungs and their digestions, and endanger their chances of happy maternity, for the sake of a wasp waist; to talk slang closely verging on indecency, for the sake of the tenth part of a chance of catching a husband; and to simper and leer at the indecencies of a *Grande Duchesse de Gerolstein*, in order to escape the dreaded imputation of a deficiency in *chic*.—Lancet, Oct. 2, 1869.

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Dissection Wounds.—The name of Prof. Boehm, of Berlin, must be added to the long list of victims who have perished in the accomplishment of the perilous duties of the profession. While dissecting a body in the presence of the students, he scratched his hand with the scalpel, but so slightly that he neglected to cauterize the wound or to take any other precaution. Two days afterwards the hand had swollen enormously; and since then all the means which had been tried to arrest the progress of the disease have been to no purpose.

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University of Edinburgh.—Mr. Joseph Lister, Professor of Surgery in the University of Glasgow, has been appointed Regius Professor of Clinical Surgery in the University of Edinburgh, in the room of Mr. Syme.

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Necrology.—We find announced in L'Union Médicale, Dec. 14th, 1869, the death of "Jean Devèze, a native of Rabastens (Hautes Pyrénées), ordinary physician to Louis XVIII., for the chateau of Tuileries, a sinecure which he well merited for his heroic conduct during an epidemic of yellow fever in Philadelphia." He must have reached very advanced age.

The death of Dr. Poiseuille, member of the Imperial Academy, in the section of anatomy and physiology; and that also of Dr. Boucher de la Ville-Jossy, physician to the Hospital Lariboisière is recorded in late numbers of the same journal.

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The excellence of this book is one explanation of our not having reviewed it sooner. Taking it up from time to time, we have been freshly interested in its various chapters, and so been led to defer writing our opinion of it. It is one of those works with which we are happily becoming familiar, as coming to us from time to time from across the Atlantic, which contain all that is good in European works of the same kind, together with much that is original, both in reflection and observation. It is astonishing how well the American writers succeed in gleaning, and yet giving a fresh character to their books. This work is an illustration, and pervading every chapter of it is a spirit of sound judgment and common sense, without which any work on any department of the practice of medicine is, to use the mildest word, defective. We are sorry that we cannot give further illustrations of the excellence of this book.—*London Lancet*, Sept. 4, 1869.

After an examination of this book, we think we are not mistaken in welcoming its writer as a new authority in medical literature on the diseases of children. The sources of his information are copious, and he seems to have made careful use of them. We had intended to support these opinions by quotations, but the range of the work is so comprehensive, and our readers can so much better form a notion of the industry and good judgment of its author by an extended perusal of it, that we have concluded to simply refer them to the book itself, and will only add that it is written in the clear and unambitious style befitting a scientific work.—*St. Louis Med. and Surg. Journal*, May 10, 1869.

Our fellow townsman, Dr. Smith, is well known among us as an indefatigable worker, and one who has devoted the major part of his time to the study, theoretically and practically, at the bedside and in the dead-house, of the diseases of children. From a careful perusal of his work we agree with the author, that while he has respected the opinions of previous writers, and has adopted them so far as they appeared to be correct, he has depended much more for the material of his treatise on clinical observation and the inspection of the cadaver. Most heartily do we wish the work the success it so richly deserves.—*Am. Journ. of Obstetrics, &c.*, May, 1869.

A magnificent contribution to the cure of the diseases of children. Dr. Smith covers the whole ground, and proves himself a master cultivator. His views are eminently enlightened and modern. He is alive to the new *idea.*—*Nashville Med. and Surg. Journal*, May, 1869.

The work before us is a valuable addition to the text-books of the subject. While it covers the ground of the recognized principles and treatment of the diseases of childhood and infancy, it teems with a freshness of suggestion and resource which will insure it a place in every physician's library.—*Leavenworth Med. Herald*, May, 1869.

The author of this volume is well known as a valued contributor to the literature of his specialty. The faithful manner in which he has worked in the public institutions with which he has been connected, the conscientious regard for truth which has for years characterized all his researches, the great amount of experience which he has been enabled to acquire in the treatment of infantile diseases, and the care which he has accustomed himself to take in the study of the significant facts relating to the pathological anatomy of the diseases of childhood, eminently fit him for the task which he has taken upon himself. The remarkable faculty of bringing out salient points and stating concisely other less important facts, enables him to crowd within a small compass a vast amount of practical information. The attention given to the treatment of the various maladies, as well as the presentation of all the recently accepted pathological views, makes it one of the most valuable treatises, within its present compass, that can be placed in the hands of any seeker after truth. The volume as a whole will still further establish for the writer a permanent and enviable reputation as a careful observer, an impartial interpreter, a safe and trustworthy adviser, and a modest and untiring student.—*N. Y. Med Record*, March 15, 1869.

We have perused Dr. Smith's book with not a little satisfaction; it is indeed an excellent work; well and correctly written; thoroughly up to the modern ideas; concise, yet complete in its material. We cannot help welcoming a work which will be worthy of reliance as a text-book for medical students and younger physicians in their investigations of disease in children. Dr. Smith's concise, yet searching description of each disease reminds us of the style of Gooch; while his practical and careful suggestions for treatment recall the instructions we received from Dr. Ware. The book is very free from those crudities of judgment and practice and style which disfigure so much of our current professional literature; and we are glad to close, as we began, by welcoming a valuable book to the profession.—*Boston Med. and Surg. Journal*, March 4, 1869.

No previous American book can claim to represent the present condition of infantile pathology and therapeutics; and repeated furbishings of English treatises have still left much undone. Our own periodical literature has been singularly barren of reliable data in these departments; and Dr. Smith deserves praise for having culled out what was to be found, and combining therewith the substance of the later English and some of the Continental works, but especially for the assiduity with which he is known to have prosecuted years of study in the midst of opportunities and abundance of material, which must have enabled him to avoid useless theories in the presence of a multitude of facts; so that, when he speaks for himself, it need not be with a doubtful tone. Dr. Smith has done a good thing in getting up a handy American book full of sound practical advice upon the study and treatment of the infantile disorders which usually meet us in practice.—*N. Y. Medical Journal*, June, 1869.

An able and discriminative teacher and critic of this city, pronounces Dr. Smith's book on Diseases of Children, the best work that has made its appearance on this department of medicine. Dr. Smith has enjoyed excellent opportunities for maturing his experience in the study of these diseases, and has exibited his culture and good judgment in this book.—*Cincinnati Lancet and Observer*, June, 1869.

We have thus passed in review the most important of the chapters of this book, and it only remains for us to add that we regard the book as a valuable addition to the treatises on the subject. The description of the pathology, symptoms, and treatment of the different diseases is excellent. The formulæ which are interspersed through its pages will be appreciated by the young practitioner.—*Am. Journ. Med. Sciences*, Apr. '69.

HENRY C. LEA, Philadelphia.

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CLINICS.

CLINICAL LECTURE.

Clinical Lecture on Scarlet Fever.—By Sir William Jenner, Bart., M. D., F R. S., Physician in Ordinary to H. M. the Queen; Prof. of Clinical Medicine in University College and Physician to the Hospital.

Gentlemen: Cases of scarlet fever are not usually admitted into the wards. There is, in fact, a rule of the hospital by which they are excluded, on account of the disease being contagious. But it happened, not long ago, that some cases were admitted by accident, and one child sickened of the disease while in the hospital. I shall take this opportunity of bringing those cases under your notice, together with some others, which will, I hope, impress upon your mind all the most important points to be remembered in regard to this very common disease.

The contagious diseases of this class will form a large proportion of the acute diseases you will see in your after-life, and it is unfortunate that the great hospitals afford you no opportunity for studying them clinically. And this consideration makes me especially desirous of lecturing to you on these cases.

To-day I shall refer to cases in which the scarlet fever was free from complication, though the general disease—the scarlet fever—ranged in degree from a most trifling affection to one grave enough to kill. The disease in all these cases, however, was scarlet fever pure and simple, the throat affection even being trifling in degree. I will first read to you the abstracts of some cases.

A child eight years old was in the hospital, when, on Sunday, Nov. 15th, she complained of not feeling well, and was feverish; her skin, that is to say, felt hot, and her throat was sore. In the evening of the same day her neck and face were very red, and on the next day, Monday, she was covered

Published monthly by HENRY C. LEA, No. 706 & 708 Sansom Street, Philadelphia, *for One Dollar a year; also, furnished* GRATUITOUSLY *to all subscribers of the "American Journal of the Medical Sciences," who remit the Annual Subscription, Five Dollars, in advance, in which case both periodicals are sent by mail free of postage.*

☞ *In no case is this periodical sent unless the subscription is paid in advance.*

with the scarlatina rash. The tonsils were then bright red and swollen. Her temperature was 101.2°, three degrees higher than in health. On the Wednesday the rash was almost confined to the trunk and legs—*i. e.*, it had faded on the upper part of the trunk and the upper extremities, and had spread downwards to the legs. Her tonsils were still swollen, though no longer red; her temperature was 100°. On the Friday the rash had almost disappeared from the legs, and on the Saturday it had gone altogether. Her temperature, however, was still 100°, and it continued at that height till Monday, after which it became natural Her skin was now quite dry and harsh, and there was slight desquamation of the cuticle—that is to say, a separation of the epithelium. This girl affords us a typical case of mild scarlatina.

I will now read to you another case of the same kind. This patient was also a girl, and of the same age. On a Saturday she complained of sore-throat; on the next day, the sore-throat continuing, she was very chilly. On the Monday she had a rash on the face, neck, and chest. On her admission into the hospital these parts were covered with a brilliant scarlet eruption, somewhat elevated, and punctiform. On pressing the skin, the redness disappeared, returning when the pressure was removed. The temperature of this girl was also 101.2°, three degrees higher than natural. This was on the third day; for she was taken ill on the Saturday, and in these diseases we always reckon the day on which patients were taken ill as the first day. On Tuesday, the fourth day, the rash was less brilliant on the neck, face, and chest, but was very brilliant on the abdomen and legs, again spreading downwards. The tongue was covered with a thin white fur in the centre, but it was red at the tip and edges, and the papillæ were very prominent. The throat was very painful, and the soft palate and the fauces generally were much redder than they should be. The uvula was large and somewhat œdematous—*i. e.*, its loose cellular tissue was the seat of effusion of serum. The tonsils were swollen, but there was no exudation upon them. The temperature was 100°. The glands at the angle of the jaw were large and tender. On the Wednesday the rash on the legs was darker, more dusky, and more patchy. The temperature was now only 99.8°, still, however, decidedly higher than normal. On the Thursday the rash was almost gone, and desquamation had commenced. The tongue was clean, but red. One tonsil was still swollen, but the child had no soreness of throat. On Friday, the seventh day, the skin of the legs was still dusky, but desquamation was progressing; the abdomen felt rough; the temperature was 98.6° nearly natural. The child was well. There was no albumen in the urine at any time. The pulse was at first a little more frequent than natural, but in neither of these cases was there any other point which it is important for you to know.

Here, again, is the note of another case, very like those I have related to you, but in one particular a rare case. I have seen several such, and believe they are more common than is supposed. It is a case of relapse; the patient had scarlet fever twice in a short time.

A young woman, twenty years of age, was not quite well on a certain Friday, and on the Saturday she had sore-throat, and also a symptom which I have not yet mentioned to you, vomiting—sore-throat and vomiting. On the Sunday, Monday, Tuesday, Wednesday, Thursday, and Friday, she was covered with scarlet-fever rash. On the Saturday the throat was well, and by the Sunday there was no trace of the rash. On the Sunday following she was considered quite well. This was May 7th. Now, on Friday, the 19th of May, nearly a fortnight after she was considered quite well, and nineteen days after the disappearance of the rash, she again felt poorly, and complained of frontal headache and nausea. On the Saturday she had sore-throat, and the same evening the punctiform scarlet-fever rash again came out. On the Monday there was an abundant rash and sore-throat. On the Tuesday the rash was growing faint on the trunk, but was fully out on the lower extremities. There was no more complaint of the throat, and the young woman rapidly recovered. As a rule, the second attack runs a short course; but I have seen a patient die in the relapse.

You will note in all these cases, which are simple scarlatina, that the illness came on abruptly; the patient "took ill" at once. In all of them, too, the first symptom was sore-throat. That was the first thing definitely complained of. This is especially the case in adults; but you have here two chil dren, whose first complaint was of their sore-throat. The suddenness with which scarlet fever often commences is well illustrated by the description which a patient once gave me of its commencement. She said: "I was quite well when I went down stairs to fetch some water. Crossing the yard, I felt my throat was sore." That was the first intimation that she was ill. Then rapidly follow the other symptoms.

Another symptom present in one of our cases, and which is very commonly one of the first symptoms, especially among children, is vomiting. Vomiting, when very severe and frequently repeated, is said to indicate that the throat will suffer severely, and certainly I have seen some cases which support this opinion.

Another common symptom which you have heard mentioned is frontal headache. In the whole class of diseases of which scarlet fever is a type—viz., the acute specific diseases, headache is common, and it is nearly always frontal. Why it is so I don't know. It has nothing to do with the mucous membranes of the frontal sinuses, though it used to be thought that it had. There is the same headache in typhoid fever, which does not specially affect the mucous membrane of the nose or pharynx; the same in typhus, and in all these diseases. Febrile disturbance with frontal headache should at once awaken in your mind the suspicion that it is with one of the diseases of this class that you have to do.

Again, in all these cases there was at the early part of the illness a little sense of chilliness. That is common. Much more rarely the patient has rigors—distinct shiverings—at the onset of the disease.

The temperature at the onset was not taken in any of our cases. Public institutions do not afford an opportunity of taking the temperature at this early period—the first day. But if you do take it then, you will find it very distinctly elevated—100° or 101°, or more; and the higher the elevation on this first day of illness, the more probable it is one of these acute specific diseases.

Those, then, were the first symptoms of illness in the cases I have related. On what day did the rash appear? In one of them there was some redness of the face on the first day, and on the second day the rash was out. In another, it did not appear, or we had no evidence that it appeared, until the third day, when the child came into the hospital. The upper part of the abdomen was then, however, covered so it is probable that it appeared on the preceding day. Thus in each of these two cases it is probable that the true rash came out on the second day. In the case of the young woman, although she was not very well on the Friday, the sore-throat did not begin until the Saturday, and so that was really the first day of the scarlet fever, and her rash was out on the Sunday—the second day. Again, in her next attack she had the sore-throat on the Saturday, and on the Monday she was covered with an abundant rash. Thus in all these cases the rash probably appeared on the second day of the throat affection.

The second day is the common day for the rash to appear in scarlet fever. In the great majority of cases, the patient having sore-throat on the Monday will have the rash out on the Tuesday. Though the second day is the usual date for the appearance of the rash, it is not uncommon for it to be out on the evening of the first day. Now and then it does not come out till the evening of the fourth day, and rarely it does not appear for a week. On any day, then, during the first week the rash may come out. It is said that it sometimes appears later still

Remember, then, the second day for scarlet fever; the third day for smallpox; the fourth day for measles; the fifth day for typhus; the eighth day for typhoid fever. Those are the typical days. There are frequent deviations, however, in all excepting smallpox, the rash of which very constantly appears on the third day.

The rash in scarlet fever first appears, as it did in these cases, about the neck. Rarely there is a little flush about the face, but the true rash appears about the root of the neck. If you suspect scarlet fever, if the patient is hot and has scarlet lips and a little sore-throat, you throw back the clothes and look for rash at the root of the neck. In measles, you turn back the hair, and look at the margin of the hairy scalp for the first appearance of the rash. In smallpox, the eruption appears first about the upper lip and nose, the centre of the face. In typhoid fever, on the abdomen and thorax. In typhus, the place where the eruption occurs the earliest is often on the backs of the hands, but it occurs also on the trunk.

Note the characters of the rash. It was punctiform. This is its character. It comes out in little scarlet dots, which become more and more numerous till they unite, and the whole surface is bright scarlet. The parts which constitute the dots are the most vascular parts of the skin, the papillæ, and the orifices of the follicles and of the sweat-ducts. The rash is most abundant and darkest where the skin is roughest, on the outer aspect of the limbs. In addition to this scarlet rash, not unfrequently there are a few petechiæ, and that in cases running a perfectly satisfactory course. There are a few extravasations of blood into the substance of the true skin just under the cuticle. These occur most commonly where the skin is the thinnest and most delicate, as at the flexion of the arm. I mention the occurrence of these petechiæ for the benefit of the younger of you, who may think, when first they see a case of scarlet fever with some petechial spots, that the patient is about to be very ill.

So much for the appearance of the rash. Now for its progress. It begins, as I told you, at the root of the neck, and it spreads downwards over the arms and trunk. The parts most affected are usually a little swollen—the hands, for example, are a little puffy. The rash then spreads down to the legs, fading at the upper part of the body, just as it did in the cases I read to you for the purpose of impressing this fact on your memory. It passes down and goes out by the toes, if I may use the expression.

I told you that the rash usually appeared on the second day of illness. On what day does it disappear? The rash disappears, even from the legs, in a typical case, by the seventh day of illness. You may say that it has a course of about a week from the first day of illness. In our cases it disappeared on the sixth or seventh day of the fever. In some books you are told that the rash disappears earlier, in some later; but you will find the seventh day a convenient day to remember. Other days, all being common, are the sixth, eighth, and ninth Supposing the patient to have sore-throat on a Monday, the rash would probably be gone by the Monday following. It might disappear on the Sunday, or continue till the Tuesday, or even longer, though that is unusual. Now and then it disappears on the fifth day; now and then it continues till the tenth day, and in some cases it has continued even up to the fourteenth, fifteenth, and sixteenth days. Do not forget this. I have seen such cases myself, and so have most persons who have seen a great many cases.

Desquamation was mentioned as following the disappearance of the rash. Desquamation is the separation of the cuticle, of the epidermis. It commonly begins to separate from the neck, and sometimes will have separated there as a little furfuraceous, branny desquamation at the time the legs are covered with the rash. Sometimes there will be no desquamation for some days after the disappearance of the rash. It is said usually to occur during or soon after the subsidence of the rash, within a week of its disappearance. Now and then, however, a longer time elapses before desquamation commences.

The patient is often, even in the most simple form of scarlatina, when the rash is at its height, pretty thickly covered with sudamina and minute miliary vesicles. Where these have been present the desquamation commences very early, and is very abundant. It is commonly stated that the desquamation is the throwing off of a poison by the epidermis of the skin. I see, however, no ground for believing this. It seems to me that the desquamation is rather due to a certain degree of effusion beneath the cuticle. With a lens you may often find innumerable vesicles where with your hand and naked eye you could detect none. I believe that the real cause of the desquamation is this subcuticular effusion of serum. We have evidence of the occurrence of effusion into other tissues in the slight swelling of the hands, so common during the disease.

If the desquamation is delayed, it is very common to find the first evidence of it about the roots of the nails. Where the rash was very slight, where perhaps the patient was supposed to have had no rash at all, you may often know that the disease was scarlet fever by that condition. Perhaps one member of a family has had sore-throat, while the others have had scarlet fever; that one was poorly, but you did not think that he had the disease. About a week or ten days after the cessation of the illness a little opacity of the cuticle round the root of the nails may be noticed, and then a little peeling there. That is almost conclusive evidence that the illness was scarlatina. Do not forget this. It has often served me in good practical stead in determining the nature of an illness.

The desquamation lasts, as a rule, about eight days, or a little longer. From eight to fourteen days is the common period; but occasionally it is a long time before the whole of the cuticle has separated—a month, six week, or even two months. The thick cuticle on the soles of the feet may be peeling long after the desquamation on the rest of the body has ceased—when the patient is perfectly well, and has been walking about perhaps for some time. This was strongly impressed on my mind not long since. A gentleman came to me who was invited to stay at the house of a friend. He said, "You know I have had scarlet fever; but it is two months ago. Am I safe from giving the disease to any one else? I ought to tell you that the skin has not yet finished coming off the soles of my feet." I examined his feet, and, finding his statement correct, forbade him going; for I thought he might still communicate the disease.

The desquamation, then, may be so slight as to be perceptible only about the root of the nail, or it may be so considerable as to cover the whole place with dust every time the patient shakes himself.

The lips are always scarlet in the earliest stage of scarlet fever, and this fact often gives an importance to the state of the throat. The tongue, as a rule, is also bright red, especially at the tip and edges. The papillæ are large, and stand out from the thin white fur with which the dorsum of the tongue is covered, just as you heard in the description of one of our typical cases, As the disease progresses the fur disappears, and then (as there was in one of our cases) a bright-red tongue, the epithelium having been thrown off.

The soft palate and the uvula and the tonsils are also bright red, the tonsils being swollen. The redness in the early stage is distinctly punctiform, and then the spots coalesce. You may sometimes see that the arches of the palate are vivid red, while there is punctiform redness on the hard palate. The mucous membrane partakes of the eruption of the skin. It often does so in measles likewise; the inside of the lips and the hard palate being covered with eruption identical with that on the skin. I told you that the eruption in measles occurs on the fourth day; but on the second or third day, a day or two before it appears on the skin, the eruption may occasionally be found on the mucous membrane.

In one of our cases it was noted that the glands at the angle of the jaw were swollen and tender. This is according to rule. There is usually a little affection of the glands which receive the absorbents from the soft palate and tonsils. The affection of the throat is the cause of the swelling of the glands. If the throat were not affected the glands would not be swollen. We shall see presently that this is a point of considerable practical importance, and of a good deal of pathological interest. People speak of the scarlet fever process affecting the glands. It is not the scarlet fever process in the ordinary sense of the word—*i. e*, in the same way that the scarlet fever process affects the soft palate and the skin. The lymphatic glands are affected secondarily to the throat, in consequence of the absorption of something from the surface of the mucous membrane; as much as a bubo in gonorrhœa is the result of the disease of the mucous membrane of the urethra; as much as a bubo in the groin, below Poupart's ligament, after a man has hurt his toe, is the result of the injury to the toe; as much as the swelling of the axillary glands, following a puncture of the finger, is the result of that puncture. You know it is very rare indeed for primary inflammation of the lymphatic glands to occur.

Then the temperature. You notice that it never reached any great height in these cases—100°, 101°. In very severe cases it is often much higher—104°, 105°, 106°.

It is common in cases as mild as these to have a little wandering at night, a little mental disturbance; and very rarely, even in a mild case, on the date of the appearance of the eruption there is an attack of convulsions.

The pulse in our cases never reached 120. It varied from 80 to 100. In scarlet fever the rule is that the pulse rises to a certain degree of frequency, and then goes down from that point. It does not, as in typhoid fever, go up and down, in one part of the day 120, in another 90, and the patient neither better nor worse—*i. e*, you could not say, because his pulse was less frequent, that he was better, or worse because his pulse was more frequent. In scarlet fever the pulse steadily rises, and then, if there is no complication, steadily falls.

In all the cases I related to you the constitutional disturbance was very moderate, and the local specific processes—that is, the true scarlatinal processes in the throat and skin—trifling. Bear in mind, however, that in all the scarlet fever group—the acute specific diseases, typhoid, typhus, measles, scarlet fever, smallpox, erysipelas—in all this group there is no necessary relation between the severity of the local specific processes and the severity of the general disease, or between the severity of the general disease and that of the local processes. In our cases they were both mild. If there be a very severe local affection the patient will have a secondary constitutional disturbance due to the local process. If he has a bad sore-throat, he will have a constitutional disturbance dependent on the sore-throat, superadded to the constitutional disturbance of his scarlet fever. But he may have the most intense general disturbance and very little local specific process; the constitutional may be most severe when the local is trifling The patient may die of the constitutional disturbance when the local process is trifling.

Thus, a man was admitted into this hospital, aged sixty-three. He had been the subject of much mental depression and anxiety. He had for some time lived and slept in the same room and on the same bed with his two children and their mother, all ill with scarlet fever. This man, after he had thus lived and slept in this way for seventeen days, began to complain, on a Sunday, of sore-throat; and on the next day (Monday) he was brought to the hospital insensible. He went in the morning to his place of business, and while there became insensible. When admitted here his respirations were 44; his pulse could not be felt; the surface of the trunk was mottled dusky-red; the outer and posterior aspect of his arms was dusky-red—just the part where the scarlatina eruption occurs and goes most deeply, where the skin is roughest. He rallied about an hour after his admission, so far that his pulse could be counted: it was then 120. His tongue was dry, glazed, and brown. Two hours later there was more duskiness and numerous petechiæ, not merely at a particular part, but over the skin generally. He died at 3 A. M. on the Tuesday. On the Sunday he had sore-throat; on the Monday he was taken at once with the active poison; and on the Tuesday, at three o'clock in the morning, he was dead. After death, what did we find? Numerous subserous and submucous petechial spots under the endocardium, under the pericardium, under the pleura, under the peritoneum, under the mucous membrane of his stomach, under the mucous membrane of his bowel—everywhere small extravasations of blood. His tonsils were large; there was vascularity of the pharynx; and his spleen was enlarged. That is one of the features of scarlatina; as it is of all these diseases—typhoid, typhus, measles, smallpox, scarlet fever, erysipelas: in all there is softening and enlargement of the spleen.

We examined this man most carefully. I have here long notes of the state of every organ in his body, the microscopic as well as the naked eye appearances of each; but we failed to discover anything more than I have mentioned to you. He died from the poison of scarlet fever. There was no lesion of the heart, brain, lungs, or kidneys, to account for his death; he died from the general condition.

Again, a young woman, aged twenty-one, had been ailing for some time with some soreness of throat, sometimes better, sometimes worse; but she had been subject to sore-throats, and not much importance was attached to this particular attack. On Monday, June 10th, she felt ill, and had increased soreness of throat, but was still able to go out. She passed a restless night, and was decidedly ill on the morning of the next day (Tuesday). On the Tuesday night she was very bad, tossing about, but not delirious. On Wednesday, however, she was violently delirious; several persons were required to keep her in bed. All that night she was violently delirious. On Thursday morning she was insensible; and on Thursday afternoon I saw her. She was then lying on her back, inclined to the right side, resisting all efforts to move her. Her conjunctivæ were considerably injected, as they are in all these cases. It seems as if the capillary circulation generally were in some way interfered with; all the vessels are loaded with blood, and very little circulation going on. Her pupils acted but little. She muttered incoherently, but was quite unable to be aroused so as to exhibit consciousness. She passed urine into the bed freely. There was a thin sero-purulent discharge from the nose and ears. There was no swelling of the glands. She had a dusky-scarlet rash on the trunk and upper extremities; none on the lower. Her pulse was 180, very weak. Subsequently she became again violently delirious, and died at 10 30 P. M. She was taken ill on the Monday, and died on the Thursday night. At the post-mortem nothing more was found than in the last case.

Another case of the same kind. H. B——, a very fine young man, six feet high, and broad and large in proportion. We could get no history of his illness, but he came under observation on October 13th. He had had no sleep on the preceding night, and when I saw him he was delirious, leaving his bed and wandering about the ward. He said that he had been in the hospital four days. Note that in the whole group of these diseases there is a tendency on the part of the patient to lengthen time. He nearly always thinks it is a longer time since you saw him last than it really is. Everything seems long to him. It is not so in some other acute diseases—in pneumonia, for example; but in this class of diseases—the acute specific—although the patient answers you quite rationally, and tells you correctly the day on which he came into the hospital, he thinks he has been in a much longer time than he really has.

The expression of this man's face was natural. He had no headache. He was able to leave his bed alone and easily. His tongue was moist and furred, not particularly red. He complained of some soreness of the throat, but swallowed without any difficulty. He had no cough. His skin was hot and moist, and covered over the chest and abdomen with a bright scarlet rash, which disappeared on pressure. On the arms, legs, back, and beneath the clavicle the rash was more dusky; and, after pressure, minute purple spots (petechiæ) were perceptible over the whole of the body. On the night of the 13th he was violently delirious; a man had to be with him to keep him in bed. He was restrained with difficulty, bit and struggled with great violence. At five in the morning he became quieter, his breathing became difficult about six, and at half-past eight he died.

On the 13th the rash had not spread to his legs, so that we may suppose that he had not been ill above four days. His post mortem examination was made, and, as he died in the hospital, it was made very carefully. The notes of it, which I have here, occupy eight closely-written quarto pages. I am not going to read them to you, for all that we found was just what we found in the last case—petechial spots under the mucous membrane of the stomach and the bowels, under the endocardium, under the pericardium, under the pleura. There was a little recent lymph at the base of the lung, probably of only a few hours' duration, and a spleen which weighed a pound and a half. There was a little congestion of his lung, such as might have resulted from his struggles; but beyond these appearances we found nothing.

Here is another case. A young man came under my care with a very little sore-throat, but covered with the rash, and with considerable febrile disturbance. After a violent fit of delirium, he sank exhausted, with a frequent, feeble pulse. He died in half an hour from the time he was running furiously about the ward. After death the appearances we found were precisely what I have described to you—enlarged spleen, subserous and submucous petechial spots, and that was all. In these cases of death from the general disease, you will have observed that in several there was a full, free, and even bright rash.

Sometimes, in place of the rash being bright red, it is more dusky. I told you it was dusky over part of the skin in one of the cases I have described. Sometimes there is more congestion of the lung. Sometimes, instead of violent delirium, there is muttering delirium. The girl, I told you, had muttering delirium, and then became violent again. Thus there may be extreme prostration instead of active delirium, or active delirium followed by extreme prostration. I have no account of the temperature in these cases, but it has been taken in similar cases, and has been found, it is said, to be high, very high; not, however, equal, so far as I am aware, to that which has been met with in acute rheumatism, but 104°, 105°, 106°. Some have supposed that in these cases the death is due to the high temperature. I am doubtful of that, myself, in scarlatina. I think that the death is due to the changed condition of blood. It is evidently very much changed, from the occurrence of the petechiæ; and the change in the tissues is dependent on the change in the blood. More observations on the temperature in these cases are required before its influence can be clearly admitted.

There are two other forms of scarlet fever where there is only the general affection, to which you ought to have your attention directed: both are very mild forms. One of these is scarlatina without inflammation of throat—*scarlatina sine anginâ.* I doubt its existence; that is all I can say about it. There are cases without soreness of throat, but if you look into the throat, in all the cases I have seen, there is distinct redness and swelling of the tonsils, at any rate—considerable abnormal vascularity of the fauces and pharynx. I have often known patients to say they had no sore-throat, but when I have looked I have always seen abnormal vascularity. So I do not believe in scarlatina without any throat affection.

The other form is scarlatina without any eruption. About this, too, I have some doubts. Of the other I speak from having seen a large number of cases in which the patients have vowed that they had no throat affection at all, and yet I saw it. The subjective symptoms were absent, the objective were present. But it is difficult to prove the absence of the eruption. Certainly people sometimes have the disease with a very little and a very transient eruption, just a little scarlet blush, lasting a few hours, and probably there are some cases in which there is none.

Thus I have described to you cases of that form of scarlet fever in which the disease is the poisoned state of the system only, and I have described cases illustrating varieties of this form of scarlet fever, from the mildest to the gravest. In no case mentioned to day was there any grave local disease—nothing complicating the general disease. What is the treatment of uncomplicated scarlet fever with trifling local specific process? For scarlet fever proper, for the poisoned condition of the system, so far as I know, we have no remedy. There are those who say ammonia is the remedy; there are who say that hydrochloric acid is the remedy; and so on with a variety of drugs. But at the present moment my experience tells me that we have no remedy for the general disease. We can only act upon the broadest general principles of calming the patient when excited; of stimulating him, to keep his heart beating, when he is exceedingly weak; of cooling the surface when the heat is excessive. Give him pure, fresh air to breathe. It is a disease that runs a definite course, and if you can keep the sufferers alive for a certain time they get well from that general disease which killed some of our patients. So you watch for the symptoms which threaten death, and endeavor to avert them. The *very* grave cases are hopeless from the first. For the mild cases little treatment is required. A cool room, light clothes, unstimulating diet, a mild aperient, a little chlorate of potash, which seems to allay the irritation or inflammation of the throat, and that is all you need do. Some give a little dilute mineral acid; sulphuric acid was all that used to be employed at the Fever Hospital when I was there. I think myself that the best is the chlorate of potash drink. I put a drachm of the salt into a pint of barley-water, and let the patient sip it down as he pleases.

You will see that it is very different when I come to speak of the complications of scarlet fever. For some of the aggravations of the acute specific process, for some of the throat affections, we may do a great deal, and there we often save life directly; but for the disease itself, that which is the root of the matter, I repeat, so far as I know, you can do nothing. By the chlorate of potash you may do something towards allaying the throat affection; by a mild aperient you may allay a litlte the febrile disturbance which would be increased by confined bowels; by keeping the room well ventilated you prevent any increase of fever from the room becoming too close, and its air impure. And all the time you must watch the state of the urine, the skin, and the throat. One point I desire to impress on you—namely, the great importance of changing the clothes of the patient, as well as the air of the room. The blankets of the bed should be changed frequently, as well as the body-linen and sheets.—Lancet, Jan. 8th, 1870.

HOSPITAL NOTES AND GLEANINGS.

Pyæmia, with Singular Eruptive Symptoms.—There are two points of great interest about the following case. The occurrence of pyæmia without an assignable external cause is always an interesting thing; and in this instance, neither in life nor at the post-mortem examination could any such cause be detected. From the very plain evidences of severe blood-poisoning which the case presents, one is constrained to think of possible contamination of the system by foulness of the atmosphere in which the girl had been living; and in respect to this it is worthy of note that she was residing in some servants' offices, at a club, which have been unfvourably distinguished by the number of cases of disease more or less dependent upon miasmatic influences which have occurred for some years past among their inmates. Another point of interest is the peculiar eruption; it presented, at one stage, no small superficial resemblance to smallpox, but this rapidly disappeared, and the bullæ which were developed along with the pustules in many cases contained reddish serum, and were of considerable size. Dr. Anstie believes such a complication of pyæmic poisoning to be very rare. Finally, this case repeats the warning given by so many others of the insidious manner in which pyæmia develops itself, and the especial frequency with which its early symptoms may be mistaken for those of rheumatism.

Emma W——, aged twenty, admitted September 10th; scullery-maid at a club. She complained, on admission, of pain in her joints, and said she had had "rheumatism" for several days. Temperature 101°. Left eyelid a good deal ecchymosed. She was treated at first for rheumatism, being put on beef-tea, milk, &c., and ordered ten grains of acetate of potash and thirty grains of bicarbonate of potash every four hours, and ten grains of Dover's powder at night. She was a large, stout, healthy-looking girl. Good sleep was obtained that night, and in the morning no visible change could be observed.

Sept. 12th.—To-day she is not quite so well. Temperature 102°. On the right side of the face there are a couple of red spots.

13th.—All over the face and trunk are a number of bullæ and pustules, in various stages. The patient slept badly last night, and had one attack of rigors. Temperature 104°; sickly odour about her. Tongue foul, and coated white. Tenderness of joints; left knee much swollen. On the dorsum of the right hand there is an inflammatory blush. There is a similar one over the back of the left ankle. Motions passed involuntarily; they are extremely yellow and very offensive. At this stage Dr. Anstie ordered eight ounces of sherry per diem, and two-grain doses of quinine every four hours; but no good effect was produced, and the patient passed into high delirium. This continued all night. There was much diarrhœa, and a very offensive smell about the patient.

On the following morning, the 14th, the pustules and bullæ were still more numerous, the tongue was dry and brown, and the lips and teeth coated with sordes. Death occurred at 5 P. M.

Post-mortem examination.—Heart normal; both lungs studded at the base with patches of lobular pneumonia, in various stages. These were about the size of a sixpence. Most of them were in the first or second stage, but one or two were soft, broken down, and whitish-gray. Stomach healthy; kidneys congested and enlarged, each weighing seven ounces. Spleen small and congested. The left knee-joint contained a large quantity of thin, yellow pus; and an incision made into the inflamed dorsum of the right hand also gave exit to a quantity of pus.—Lancet, Jan. 22, 1870.

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Extroversion of Bladder.—Mr. WOOD operated, Jan. 1, 1870 at King's College Hospital, for the second time, on a lad suffering from extroversion of the bladder. On a previous occasion, he had taken flaps from the tissues of the abdominal wall, one from each side (with the skin surface next the opening), and one from above, which he turned down on the other two, its raw surface being in apposition with the raw surface of the others. The lad was in good health, and, so far, everything had gone well. Mr. Wood now proceeded, by making flaps from the lower part of the abdomen and the scrotum, to cover in the remaining part of the opening, and form a roof to the penis. He removed the scrotum in one flap, exposing the tunicæ vaginales testium. The latter were covered from the thighs and under surface of the penis. A little difficulty was met with; but Mr. Wood remarked that experience had shown that the testes were well protected by the overhanging pubes, and would soon be covered with granulations. Mr. Wood mentioned the anatomical conditions met with in these cases of epispadias, and pointed out the developmental changes going on in the fœtus at the time when the arrest probably occurs (about the second month), and gave his experience of his operation for the relief of the deformities. He had now operated on ten cases; in all of them, with the exception of two, great benefit had resulted. In one case, that of a young girl, after a comparatively slight plastic operation, uræmic poisoning followed, and the child died; afterwards, the kidneys were found extensively diseased, and one ureter quite blocked up. In the other case, after operating, the child had violent fits of coughing, and the stitches gave way. He thought it better to defer proceedings till the child had more self-command. As regards the frequency of ectopia vesicæ in females, he had met with it in the proportion of about one in twenty. He thought its infrequency very remarkable. Possibly a certain number of cases in females were carefully concealed from observation. He had been represented as attempting to form a perfect bladder which would retain urine in the upright posture of the body as well as when lying down. This was manifestly impossible. The dartos of the scrotum would never make a voluntary muscle. He had, however, accomplished this much, that when the patients were in bed, a certain amount of urine gravitating to the fundus of the bladder would be retained; and, at all times, a simple instrument only was required to be worn, instead of a very elaborate one. Some males were compelled to wear "petticoats," on account of the malformation of parts; this, of course, was obviated. Mr. Wood illustrated the steps of his operation on the black board.—Brit. Med. Journ., Jan. 15, 1870.

MEDICAL NEWS.

DOMESTIC INTELLIGENCE.

Alumni Association of the Medical Department of the University of Pennsylvania.—The graduates of the Medical Department of the University of Pennsylvania are invited to meet in the College Hall on Commencement Day, Friday, March 11th, at 5 o'clock P. M., to form an Alumni Association. It is hoped that the meeting will be largely attended, as its object is commendable.

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Jefferson Medical College of Philadelphia.—We have before us the catalogue of this institution for the session 1869-70, from which it appears that the number of matriculants for the session is 435.

Philadelphia Dispensary, for the Medical Relief of the Poor, instituted April 12, 1786.—The annual report for 1869, of this ancient and most valuable institution, shows that it continues quietly and unostentatiously to pursue its useful course. The object of the institution is to afford medical relief to the worthy (not the lowest class of) poor, in those cases where removal to a hospital would, for any approved reason, be ineligible. Pecuniary aid, under close limitations, is occasionally afforded, trusses and surgical appliances furnished, and in some cases of great exigency, nursing aid afforded. Fourteen thousand five hundred patients have been treated during the year.

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Professor Nathan R. Smith.—This eminent surgeon has resigned the chair of Surgery in the University of Maryland, which he has filled with great ability for the past forty years.

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Medical Instruction in Philadelphia during the Summer of 1870.—Ample facilities will be afforded for the instruction of medical students who may spend their summer months in this city. In addition to the regular spring and fall courses of lectures at the University of Pennsylvania and the Jefferson Medical College, several private schools will be open; of these we have received the announcements of the following:—

Philadelphia Summer School of Medicine.—Robert Bolling, M. D; James H Hutchinson, M. D.; H. Lenox Hodge, M. D; D. Murray Cheston, M. D.; Geo. C. Harlan, M. D.; I. Minis Hays, M. D. The Sixth Session of this School will begin March 1st, 1870, and will continue until October.

Clinical Instruction, Dissection, and Operative Surgery from the first of March to the first of October.

Lectures and examinations daily during April, May, June, and September.

Examinations on all the branches taught at the University of Pennsylvania.

Regional Anatomy.—Lectures and Demonstrations by H. Lenox Hodge, M. D.

Percussion and Auscultation in Diseases of the Lungs and Heart.—Lectures and Clinical Examination of patients, by James H. Hutchinson, M. D.

Diseases of the Eye and Ear.—Lectures upon the Anatomy, Physiology, and Diseases of the Eye and Ear, by George C. Harlan, M. D.

Urinary Deposits and Tests.—Students will be instructed in the microscopical and chemical examination of the urine, and will be enabled to make themselves familiar with the necessary manipulations, by James H. Hutchinson, M. D.

Dissections and Surgical Operations may be practised by the members of the class to the best advantage.

Special Clinical Instruction will be given the class at the Pennsylvania Hospital, the Children's Hospital, and the Dispensary for Diseases of the Heart and Lungs.

Office students are received, through their preceptors, or upon their own application, for a part or the whole of a three years' course of study. They are admitted to the Winter Examinations and to the Summer School of Medicine, and thus have the benefit of a systematic course of examinations during both the winter and summer. They are instructed *practically* in Anatomy, Bandaging, Dressing of Fractures, Operative Surgery, Percussion, and Auscultation, Obstetrics, and Examination of Urine. They are also enabled to attend women during confinement.

Clinical Instruction is provided for them at the Pennsylvania Hospital, Philadelphia Hospital, Children's Hospital, and Wills Hospital for the Eye.

Bed-side Instruction during February, March, and April, is given them in the wards of the Pennsylvania Hospital by Dr. James H. Hutchinson.

Winter Course of Examinations will begin with the Lectures at the University of Pennsylvania in October, and will continue till the close of the session.

Candidates for admission to the army and Navy, and those desiring promotion to a higher grade, may obtain private instruction.

Jayne Street Medical Institute.—George Pepper, M D.; William Pepper, M.D., Harrison Allen, M. D.; Edward Rhoads, M. D.; James Tyson, M. D., will continue their Course of Annual Instruction as heretofore.

Winter Examinations will begin with the lectures at the University in October, and continue throughout the Session, embracing all the branches taught at the University.

Summer Examinations will also be given during the months of April, May, June, and September, in connection with the study of the authorized Text-books.

Office students will be received, through their preceptors or on their own application, for the whole or part of a three years' course of study. They will have the advantage of the Winter and Summer Examinations. Special bed-side instruction will be given them by Dr. Rhoads and Dr. W. Pepper; and Clinical instruction will also be provided for them at the Pennsylvania Hospital, and the Wills Hospital for the Eye. They will also have the advantage of the Special Courses of Lectures delivered by the different members of the Association.

Dr. H. Allen will give instructions in Minor Surgery, including the use of instruments for the examination of the eye, ear, nose, and throat.

Dr. George Pepper will deliver a course of lectures upon the Diseases of Women.

Clinical Instruction upon the Diseases of Women will also be given in connection with the Lying-in Charity.

Dr. Rhoads will deliver a course of lectures on Diseases of the Heart and Aorta, clinically considered, as independent affections, and in their relations to other diseases. The course will be in immediate connection with the wards of the Philadelphia Hospital, and will embrace lessons in Physical Examination of the Heart and Lungs.

Dr. Tyson will deliver a course, including lectures on the physiology and pathology of the blood and urine, the minute structure of all important physiological and pathological tissues, with the theories of their development, and the special methods required for the demonstration and preservation of each.

Dr. William Pepper will deliver a course of lectures on the Diagnosis and Treatment of Diseases of the Nervous System, clinically considered, embracing instruction in the practical application of electricity in disease. The lectures will be in immediate connection with the wards of the Philadelphia Hospital.

Bed-side Instruction, embracing careful lessons in medical diagnosis, will also be given by Drs. Rhoads and W. Pepper to classes of limited size in the wards of the Philadelphia Hospital.

Summer Course of Lectures.—William Pepper, M. D, Diseases of the Nervous System; Frank F. Maury, M. D., Clinical Surgery; Edward Rhoads, M. D., Diseases of the Heart and Aorta; George Pepper, M.D., Diseases of Women; Samuel W. Gross, M. D., Orthopædic Surgery; James Tyson, M. D., Microscopy. These lectures will be delivered during the months of April, May, and June.

Those on Diseases of the Nervous System, Clinical Surgery, Orthopædic Surgery, and Diseases of the Heart and Aorta, will be clinical in character, and will be given in immediate connection with the wards of the Philadelphia Hospital, and of the Philadelphia Orthopædic Hospital.

The other lectures will be delivered at convenient hours.

Medical Chemistry. — Dr. H. B. Hare will deliver a course of lectures during the months of April, May, and June, on the general characteristics of the Urine in health and disease; especially with reference to disorders of the kidneys and bladder.

The various methods of qualitative and quantitative analysis of the urine, as well as its microscopic appearances, will be demonstrated before the class, who will thus have an opportunity of becoming familiar with all the modes of manipulation necessary in the clinical examination of the urine.

The chemical characters of the other secretions of the body will also be demonstrated in their healthy and morbid conditions.

The course will be accompanied by drawings and specimens illustrative of the pathological changes of the kidneys, bladder, and urine.

The lectures will be delivered at the N. W. corner of Ninth and Chestnut Streets, third story.

Philadelphia School of Anatomy, Chant Street, Tenth Street above Chestnut.—The following courses of lectures will be delivered in this institution during the Summer Session of 1870: Anatomy, descriptive and surgical, and Operative Surgery, by Dr. W. W. Keen; Bandaging Fractures, and Fracture Dressings, by Dr. O. H. Allis.

Dissection will be carried on under the direct and personal supervision of the Assistant Demonstrators of Anatomy. The Dissecting Room will be open also during all the month of March, with abundant material.

Special arrangements may be made for private courses by candidates for the Army or the Navy, or by others.

Diseases of the Chest and Larynx.- Dr. Herbert Norris will give in connection with the clinic at the Dispensary, No. 716 Catherine Street, a course of instruction in the diagnosis and treatment of diseases of the Larynx, Lungs, and Heart; beginning March 21st, and continuing tri-weekly for three months.

Students will thus have the opportunity of becoming practically familiar with the diagnosis of these diseases, by means of auscultation and percussion, and also of acquiring facility in the use of the laryngoscope, and in the topical application of remedies to the larynx.

Obituary Record.—We have to record this month the death, at Lexington, Ky., on the 20th of January last, of Benjamin Winslow Dudley, M. D., at the mature age of 85 years. Dr. D. was one of the most eminent surgeons of his day, and was conceded to be the ablest surgeon in the Mississippi Valley. His great reputation attracted to him most of the operative surgery of that extensive region, and his success, especially as a lithotomist, was remarkable. For many years he filled the two chairs of Anatomy and Surgery in the Medical Department of Transylvania University, and his ability as a teacher of those branches largely contributed to the success of the school. He did not contribute much to the literature of our science, but the few papers he has published make us regret that he did not write more. In his social relations he was universally esteemed for his great worth and public spirit, which secured to him many steadfast friends.

FOREIGN INTELLIGENCE.

Death from Chloroform.—J. P., farmer, æt. 68, was admitted into the York County Hospital for the purpose of having partial amputation of the foot performed, on account of disease of the bones. Chloroform was administered by the house-surgeon previously to the operation being performed, on January 11th. Scarcely a drachm had been inhaled, when the patient suddenly became rigid, and his pulse stopped. Every exertion was made for his restoration, and artificial respiration was kept up for more than three-quarters of an hour, but without avail.—Brit. Med. Journ., Jan. 22, 1870.

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On Death from Chloroform.—On Feb. 1st, Dr. Richardson gave a most important and highly practical discourse to a very large class, on the cause of death from chloroform, and the way to avoid accidents and meet emergencies which may arise in the administration of this anæsthetic.

Rapid narcotism, according to the practice of Sir James Simpson, Dr. Richardson believes to be best and safest, as thus sensation is abolished without paralyzing the muscles. A pigeon was rapidly and profoundly narcotized with chloroform, and then it was shown how readily the muscles could be roused by the galvanic battery, so that the bird flapped its wings, and yet when the stimulus was withdrawn, was as fast asleep as ever.

In another experiment a rabbit was killed by chloroform, and the thorax being then opened, the heart was seen to continue beating for many minutes, the lungs being bloodless and collapsed. This experiment showed that death by chloroform is death from the lungs and not from the heart, and the surest restorative is to inflate the lungs by artificial respiration. The muscles of inspiration fail before those of expiration, and to galvanize these last named muscles exhausts what little irritability they may still retain, and clinches the death of the patient effectually.

Dr. Richardson rather feared to give chloroform in persons with dilated right heart and overful veins; in other cases of tubercular disease, renal disease, and valvular disease of the heart, he had often given the anæsthetic without anything like an accident.—Med. Press & Circular, Feb. 9, 1870.

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Dust and Disease.—We invite especial attention to the following summary of a most interesting and instructive lecture recently delivered at the Royal Institution of Great Britain, by Professor Tyndall.

The learned professor began by stating that a sunbeam on entering a dark room becomes visible by illuminating the particles of dust floating therein. A beam of powerful light, such as that of the electric lamp will prove the existence of these floating particles in the air of this room, or, indeed, in that of any other, even of the best ordered drawing room in London, although they are invisible by the light of ordinary candles or gas. Some months ago, when he was engaged in a course of experiments on the action of light upon various vapours, he found this dust exceedingly troublesome. The air was wholly loaded with it, and although in his experiments it was of great importance to have the air entirely free from it, it became a matter of considerable difficulty to get rid of it. An "experimental tube" was filled with air which had been passed through tubes containing fragments of glass wetted with concentrated sulphuric acid, and marble wetted with a strong solution of caustic potash; but although the air was thoroughly dried by this means, the particles of dirt were carried along with it, and a beam of light passed through the tube discovered them in quantities as great as in common air. But it was found that by passing the air over a flame before letting it enter the drying tubes, every particle of dust was destroyed, and the beam of light passed through the "experimental tube" was *invisible*, owing to the absence of any illuminated particles. What did this prove? It showed, to his own astonishment, that this floating dust consisted of particles of combustible, and therefore organic matter—that the air which constantly surrounds us, which we are continually breathing, is loaded with living organisms, which are of necessity constantly passing into our lungs—that the dirt of the air of London is organic, and not, as he had supposed, of the same nature as the sand of the desert of Sahara, inorganic, incombustible. To make this matter quite certain, Mr. Valentin, of the Royal College of Chemistry, constructed for him a gas furnace, so arranged as to heat a platinum tube and a roll of platinum gauze; the air was made to pass through this tube and gauze, so as to insure the contact of the dust with the hot metal, and the result is given by the following table:—

Quantity of air.	*State of platinum tube.*	*State of experimental tube.*
15 Inches.	Cold.	Full of particles.
"	Red-hot.	Optically empty.
"	Cold.	Full of particles.
"	Red-hot.	Optically empty.
"	Cold.	Full of particles.
"	Red-hot.	Optically empty.

That is to say, when the air was passed *cold* into the experimental tube, the floating particles were not destroyed, and passed along with the air; but when the particles were consumed by the hot platinum, the experimental tube was "optically empty," there being no floating dust in it for the beam of light to illuminate.

The following table gives the results of experiments in which the air was allowed to pass into the experimental tube under various conditions of speed and temperature:—

Quantity of air.	*State of platinum tube.*	*State of experimental tube.*
15 inches, *slow*.	Cold.	Full of particles.
" "	Red-hot.	Optically empty.
" *quick*.	Red-hot.	A blue cloud.
" "	Intensely hot.	A fine blue cloud.

The cloud which appeared in the experimental tube when the air was passed quickly through the platinum was the smoke of the particles burned in the furnace. He had failed in his attempts to burn the particles in the open air by intense heat, but a flame of a spirit lamp held immediately under the electric beam gave a result which caused him the most intense astonishment. In common with every chemist he had hitherto considered the flame of a spirit lamp to be entirely smokeless. What, then, was his surprise to find that, on holding the flame under the beam, volumes of intensely black "smoke" were given off, blacker than he had ever seen issue from the funnel of a steamer! He tried several other flames; he burned spirit of wine on cotton wool; he tried the flame of a Bunsen's burner with a tall chimney, but always with the same result. Wreaths of the blackest "smoke" ascended through the beam of light, showing themselves in the distinctest manner. The question then arose—Could this blackness be smoke at all? Could no other cause be assigned to explain the phenomenon? To settle this question, he tried a flame of pure hydrogen gas, in which it was impossible that carbon could be to make real smoke. But, on this being held beneath the electric beam, the same black wreaths ascended. A mass of red-hot iron gave the same result. What, then, was this darkness which was shown to exist in cases where smoke was impossible? It was simply the darkness of stellar space—the darkness caused by the absence of organic dust, showing that pure air is dark by virtue of its own intense transparency. Nothing could demonstrate more clearly the invisibility of the medium which renders all things visible. The flame held under the beam destroys the floating particles, and a stream of pure air ascends across the horizontal beam, which, jostling aside the dust-laden air, causes a black band of pure transparent air free from illuminated dust (in appearance exactly like smoke) to take its place across the beam. But it was also discovered that it was not necessary to consume the dust in order to produce pure air It was found that a sphere of heated copper held beneath the beam of light produced the same "smoky" appearance, and that, too, even after the temperature of the copper had fallen below that of boiling water. Upon this it was suggested that a sphere of boiling water would produce the same result, and this was found to be the case, although in a less degree. The reason of this is simple; the heated body quickly heats the air immediately surrounding it, but not the particles; the pure hot air ascends and makes its dark track across the beam, but the particles are left behind.

The learned professor then showed that any gas, provided it was free from these floating particles of dust, would produce the same dark mark across the beam of light. He took a common glass shade, and placed it with its mouth downwards so that the beam of light should pass right through it from side to side. The shade being full of the air of the room, the light was of course visible all the way through it. He then introduced into the upper part of the shade, above the beam of light, a tube connected with a reservoir of hydrogen gas. The hydrogen soon filled the upper part of the shade, and, occupying more and more space as its volume increased, it speedily filled the greater part of the shade, the beam of light *in* the shade fading from the sight of the spectators as the hydrogen occupied the space traversed by it. The shade being removed, the beam of light reappeared instantaneously in its place, but on the hydrogen being allowed to escape, a darkness as of a cloud of smoke passed across the beam, which immediately after its passage resumed its usual unbroken aspect. A gentleman present seemed inclined to question the success of this experiment, but the learned Professor partially repeated it, and completely proved his point. Having then observed that any other gas—*e. g.*, common coal gas—would serve equally well for this experiment, he said that, seeing that the air we are constantly breathing is so entirely laden with these particles of organic matter, the wonder is that so small a portion of it is hurtful to human life. For some time an opinion had prevailed that contagious diseases were spread by a malaria; it was believed that matter in a state of decay entered people's bodies and produced in them conditions of decay like to its own. It was seen that the process of fermentation went on in this way, and that a little leaven leavened the whole lump. Why, then, it was asked, should we not believe that diseases propagate themselves thus? But in 1836 an answer was given to this question by the discovery of the yeast plant, and fermentation was shown to be a process of life instead of one of decay. In 1837 Schwann discovered that meat highly heated and excluded from air never putrefied. Putrefaction is, then, the result of something derived from the air, which has the power of propagating itself in the body, and must be a living organism such as the dust of the air has been shown to contain. The "germ theory" of the propagation of disease has been slowly gaining ground in the opinions of medical men, and, at a time when it was thought improbable by many of them, the president of this institution was one of its ablest advocates. These germs floating in the air enter the human frame, and, growing there, produce various disorders. In this way the Asiatic cholera, from a small beginning in the delta of the Ganges, in seventeen years occupied nearly the whole world. And the action of these germs has its exact counterpart in another part of nature's field; for as an acorn will produce an oak bearing a crop of acorns each capable of reproducing its parent tree, and so a whole forest may spring from a single seedling, so a germ of smallpox lodged in the body will produce a crop of pustules each one capable of reproducing germs like to the original one. Medical men know well how important it is to exclude the air from abscesses when they are being operated on, and instruments are specially constructed for this purpose; yet although the pus extracted on the first operation is sweet, on the second and all other operations it is generally putrescent, and swarming with living organisms called *vibrios*. This is caused by the germs clinging to the trocar, and by it introduced into the abscesses, flourishing therein under favourable conditions of temperature and food. The only way to "clean" the canula and trocar of these germs is to heat the instruments as highly as their temper will allow. It was an ascertained fact that the troublesome hay-fever was caused by these same vibrios.

Having shown that it is useless to try to blow away the dust from a beam by means of bellows, since the dust from the bellows immediately replaces that blown away, the learned professor proceeded to experiment on the state of the human breath as it issues from the lungs. His lungs being full of the common air of the room, he breathed through a heated tube so as to cause the breath to ascend through the beam of light, at the same time preventing any cloud of condensed aqueous vapour. At first no extraordinary appearance was visible, but soon the familiar dark clouds denoting the absence of illuminated dust appeared. He contended that this showed the history of the air in the lungs as clearly as if his skin and breastbone were transparent. The air which entered the lungs at the end of taking breath, being also the first to leave them on expiration, had not had time to deposit its dirt; but the air which entered the lungs first, and left them at the end of the expiration, having deposited its dust at the bottom of the lungs, showed its freedom from floating particles by its smoke-like track across the beam. Again, he filled his lungs with air filtered through cotton wool, and, on expiration, the dark clouds were seen from beginning to end. This proves that a filter of cotton wool will exclude these particles, as might also be seen by filling the nozzle of a common bellows with lightly packed cotton wool, and directing the air across a beam of light. Instinctively acting on this principle, a medical man, on entering an infected atmosphere, places his silk handkerchief over his mouth and nostrils; and, taking this hint, Dr. Bence Jones had tried the above experiment, substituting silk for cotton wool, and had obtained substantially the same result, though in a less perfect degree. In conclusion, the learned professor recommended the use of a respirator of cotton wool as a means of giving pure air to the lungs to all who are likely to be breathing germ-laden atmospheres; and at the present time, when London was full of scarlatina, he would recommend these respirators as the most efficient protection; and, armed by one of these, he declared his perfect willingness to enter any atmosphere, however infected it might be by scarlatina or other diseases.—Med. Times and Gaz., Jan. 29, 1870.

JUST ISSUED:

I.

TANNER'S CLINICAL MANUAL.

A MANUAL OF CLINICAL MEDICINE AND PHYSICAL DIAGNOSIS. By Thomas Hawkes Tanner, M. D., &c. Third American from the Second English Edition, revised and enlarged by Tilbury Fox, M. D., Physician to the Skin Department in University College, London. In one handsome volume small 12mo. of 366 pages, extra cloth, price $1 50.

So much has been added to the resources of diagnosis during the last few years that the present volume may almost be regarded as a new book rather than as a new edition. Notwithstanding its great enlargement it has been placed at a price within the reach of all in the expectation of a very large demand, not only from students but from practitioners who desire to familiarize themselves with the latest positive additions that have been gained in scientific medicine.

As a concise yet clear manual of what to observe and how to make up a diagnosis from the facts presented, we cordially commend this little book as excellently well adapted for the every-day use of both students and practitioners.—*Chicago Med. Journal*, Feb. 1870.

II.

SWAYNE'S OBSTETRIC APHORISMS.

OBSTETRIC APHORISMS, for the use of Students commencing Midwifery Practice. By Joseph Griffiths Swayne, M. D., Physician Accoucheur to the British General Hospital. From the Fourth and Revised London Edition, with additions by E. R. Hutchins, M. D. With Illustrations. In one neat volume small 12mo., extra cloth, $1 25.

The object of this little volume is to afford that kind of practical information which is required by the student or junior practitioner who is called upon for some acquaintance with the management of ordinary cases of labor. The editor has added a few notes and two chapters—one on abortion and the other on the management of the new-born child, which seemed requisite to give completeness to the work.

It is really a capital little compendium of the subject, and we recommend young practitioners to buy it and carry it with them when called to attend cases of labor. The American editor has materially added by his notes and the concluding chapters to the completeness and general value of the book.—*Chicago Med. Journal*, Feb. 1870.

III.

LEA'S STUDIES IN CHURCH HISTORY.

STUDIES IN CHURCH HISTORY—THE RISE OF THE TEMPORAL POWER, BENEFIT OF CLERGY, EXCOMMUNICATION. By Henry C. Lea. In one large royal 12mo. volume of 516 pp., extra cloth, $2 75.

There is something marvellous in the industry through which so many intellectual treasures have been placed at our service. In the three essays which compose the present volume, the sources, humanly speaking, of the prolonged influence of the Church of Rome on the destinies of mankind are unfolded with a wealth of illustration which leaves the reader little to desire.—*Lippincott's Magazine*, March, 1870.

They are careful studies by a thorough scholar in the most interesting of all historical fields, made without passion or prejudice, and recorded with honesty. The whole volume is of the deepest interest; the style is masculine and animated, and great skill is shown in weaving in anecdote and picturesque stories, without impairing the flow of the relation or the proper dignity of the composition.—*Hartford Courant*, Jan. 22, 1870.

We recommend the book as a highly instructive discussion of matters which are always of interest to scholars, and which are just now clothed with a special importance.—*N. Y. Nation*, Feb. 3, 1870.

IN PRESS:

I. FLINT ON THE HEART.

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THE MEDICAL NEWS AND LIBRARY.

VOL. XXVIII. APRIL, 1870. No 328.

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CLINICS.

LECTURE.

Lecture on Hæmoptysis: its Causes, Results, and Treatment. By George Johnson, M. D., Physician to King's College Hospital, etc.—Since the time of Laennec, it has been very generally assumed that hæmoptysis, when not associated with valvular disease of the heart, or vicarious of the catamenial discharge, is almost always a result and an indication of tubercular disease of the lung. I have long known and taught that this doctrine, thus broadly stated, involves a large amount of error. I have seen a considerable number of cases of hæmoptysis in which there has been no evidence of structural disease within the chest, either at the time or for months and even years afterwards. Spitting of blood is a symptom which at the best is sufficiently alarming; there is no need to aggravate its terrors by the erroneous assumption that it is almost invariably associated with serious organic disease either of the heart or the lungs.

Let a man who has once spat blood apply to an insurance office, and the probability is that he will be rejected, or required to pay a large increase of premium; yet it may be that the blood-spitting was as much the result of a harmless accident as if the nose had been the source of the bleeding. The lung is by far the most vascular organ in the body. In addition to its own nutrient bronchial vessels, the whole of the blood from every other organ passes through the pulmonary capillaries. These two systems of vessels in the lung, in consequence of their relation to each other, to the heart, to the movements of the chest, and to the function of respiration, are more liable to sudden strain and pressure than the bloodvessels of any other organ; and it would be indeed marvellous, if bleeding did not frequently occur from their accidental rupture, without previous disease.

Now let us pass in review the chief known

Published monthly by HENRY C. LEA, No. 706 & 708 Sansom Street Philadelphia, *for One Dollar a year; also, furnished* gratuitously *to all subscribers of the "American Journal of the Medical Sciences," who remit the Annual Subscription, Five Dollars, in advance, in which case both periodicals are sent by mail free of postage.*

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causes of hæmoptysis; and by hæmoptysis in this lecture I mean hemorrhage from the air-passages, excluding cases of bleeding from the gums or fauces.

First, then, tubercular disease of the lung is a frequent cause of hæmoptysis. Certain of the pulmonary capillaries are compressed by a tubercular deposit; the surrounding vessels are subjected to increased strain; they consequently give way, and hemorrhage occurs. In a more advanced stage of the disease, when softening of the deposit is in progress, bloodvessels may be opened by ulceration. In some instances, considerable branches of the pulmonary artery in tuberculous lungs become aneurismal; and the rupture of such an aneurism may be a source of sudden, copious, and even fatal hemorrhage.

Disease on the left side of the heart is a well-known cause of hæmoptysis. Suppose an incompetent mitral valve: the left ventricle drives a portion of the blood forcibly backwards into the lungs, while the right ventricle continues to propel the blood onwards. The pulmonary capillaries, strained by the increased pressure upon their walls, give way, and the result is hæmoptysis and pulmonary apoplexy.

Disease on the right side of the heart is comparatively rare; but, when it does exist, it not unfrequently causes bronchial hæmoptysis. In the "Medical Times and Gazette" of February 13th, 1858, I published the case of a woman whose sole organic disease was great dilatation of the tricuspid orifice. The whole systemic venous system was much engorged, in consequence of the reflux of blood through the tricuspid orifice. The bronchial veins and capillaries were partakers in this engorgement, and the result was rupture of bronchial capillaries and hæmoptysis. In cases of congenital narrowing of the pulmonary artery, hæmoptysis has been a frequent sympton. This, again, is a result of a retrograde engorgement of the bronchial veins and capillaries. These patients, too, have frequently become phthisical. I shall presently refer to the occurrence of phthisis as a *consequence* of pulmonary hemorrhage.

Bronchial hæmoptysis, resulting from disease of the right side of the heart, will help us to understand the hæmoptysis of apnœa. Thus hæmoptysis, to a variable extent, is an occasional accident in cases of spasmodic asthma. What is the explanation of this? Bronchial spasm limits the supply of air to the pulmonary capillaries. In consequence, the minute pulmonary arteries, by their contraction, check the onward movement of the blood. The systemic arteries are comparatively empty, while the whole systemic venous system is distended. The bronchial veins and capillaries share in this distension; and hence bronchial mucus exudation, and occasionally bronchial hemorrhage.

Active inflammatory congestion of the pulmonary and bronchial vessels is a frequent source of hemorrhage. In most cases of pneumonia, the expectoration is more or less blood-tinged. The mucous expectoration of bronchitis is not unfrequently mixed with blood. In both pneumonia and bronchitis, profuse hæmoptysis is an occasional occurrence, quite unconnected with tubercular disease.

About three years ago, I attended one of our former house-surgeons with bronchitis. He had profuse hæmoptysis for several days in succession. I felt very anxious about him; but there were no positive physical signs of tubercular disease; and I always hoped, and expressed hope. He completely recovered, and is now actively at work. I have seen several cases of the same kind.

Plastic bronchitis is a rare disease. I have met with it only once. When it does occur, hæmoptysis is a frequent symptom.

In cases of primary cancer of the lung, the sputa are more or less blood tinged, and not unfrequently assume the appearance of red currant-jelly.

In several cases of hæmoptysis that have come under my observation, emphysema of the lung has been the only structural change that I could discover. In most of these cases, the exciting cause of the hæmoptysis has been either an attack of bronchitis or over-exertion. In one case, a fat lady with emphysematous lungs, while suffering from an attack of catarrh, had profuse hæmoptysis after walking up stairs. She died some years afterwards, of Bright's disease; but had no symptom of any other pulmonary disease than emphysema, with occasional catarrh.

A former clinical clerk, a powerful muscular man, who has overstrained his lungs and rendered them emphysematous by excessive gymnastic exertion, has twice had hæmoptysis after playing at football. He remains in good health.

Without doubt, excessive exertion may cause rupture of pulmonary vessels and hæmoptysis in persons whose lungs and heart are perfectly sound; but it is obvious that vesicular emphysema is a predisposing cause of hæmoptysis from over-exertion. Vesicular emphysema is associated with more or less obliteration of pulmonary capillaries, and with hypertrophy of the right ventricle consequent on the impeded circulation through the lungs. Therefore, when the heart's action is excited by active exercise, the pulmonary capillaries are injected with great force by the strong right ventricle, and the result may be rupture of vessels and hemorrhage.

In a considerable number of recorded cases, the irritation of the air-passages by a foreign body introduced through the larynx has been attended with bronchial hæmoptysis.

It is obvious that a blow on the chest, either with or without fracture of the ribs, and a consequent wound of the lung, may rupture vessels, and cause hæmoptysis. So an aneurism of the aorta, or of one of its primary branches, may open into the air-passages, and cause hæmoptysis.

In all the cases of hæmoptysis to which I have referred, the hemorrhage results from various forms of structural disease or injury, either in the lungs, or heart, or bloodvessels; but pulmonary hemorrhage may occur unassociated with any appreciable structural change within the chest. In some of these cases, deterioration of blood, and consequent weakening of the walls of the vessels, are the probable causes of the hemorrhage. Thus hæmoptysis is one of the forms of hemorrhage which is not unfrequently associated with scurvy, with purpura, and with uræmia. I have repeatedly seen both profuse hæmoptysis and epistaxis as results of an habitual excess of alcohol and a deficiency of nutritious food.

Hæmoptysis is occasionally vicarious of the menstrual discharge. In cases of this kind, we must guard against deception. I once had a patient whose blood-spitting was supposed to have this origin. On examination, however, I discovered the source of the bleeding in numerous scratches which she had made with a needle in the roof of her mouth. I believe that this case is a type of some other supposed cases of vicarious hæmoptysis.

Lastly, there are cases in which there is no apparent cause for the hæmoptysis; and, to conceal our ignorance, we speak of the hemorrhage as resulting from a hemorrhagic diathesis. The following case, recently in the hospital, is an example of this (vol. xxxix. p. 75).

John Herring, aged 37, a blacksmith, was admitted Dec. 18th, on account of hæmoptysis, which began ten days before his admission. He said that, for a fortnight before he began to spit blood, he had suffered from pain in the right side of the chest. The hæmoptysis began on the 8th of December, and has continued daily until his admission. One day, the 11th December, he brought up as much as three-quarters of a pint. The blood, he said, had varied in colour, sometimes being dark, at other times bright red. He said that twelve years ago he had pleurisy; that five or six weeks after this he first spat blood, and that he had since had frequent attacks of hæmoptysis. He had sometimes passed nine months without an attack; at other times he had had two attacks within a week. The blood-spitting had generally continued from twenty-four to thirty hours. If it continued longer, he usually stopped it by a dose of elixir of vitriol. Three years ago, he had inflammation of the lung, and was laid up for six months, but during this illness he had no hæmoptysis. He said that he had always been temperate. His father died of old age (upwards of 80); his mother from "change of life, and something wrong in her head." He has three brothers and a sister in good health; none have died; his grandparents all lived to old age. On admission he was a fairly nourished man; but his face and lips were pallid. He complained of a troublesome cough, and he expectorated a quantity of dark yellowish-brown blood-tinged material, having a fetid odour; his breath, too, was fetid, and there was some pain over the right side. Tongue coated, appetite bad, bowels costive, urine normal; the skin was moist; at night, sometimes profuse perspiration; pulse, 66; temperature, 99.8. Percussion gave natural resonance over the whole front of the chest; behind, there was some dulness on percussion on the right side, from the spine of the scapula to the base of the lung; over the dull space there was rather large crepitation, with diffused blowing expiration; the vocal resonance and vibration were unchanged over the dull space; elsewhere the respiratory sounds were normal, both front and back; the heart's sounds and action were normal. He was ordered to take ten grains of gallic acid every three hours; to inhale the vapour of turpentine and boiling water night and morning. On the 22d December, the expectoration had ceased to be blood-tinged; it was of a dark-greenish colour, and still had an offensive odour. Temperature, 98.5; the dulness and crepitation over the lower lobe of the right lung were diminished; he was ordered to inhale creasote instead of turpentine. He continued steadily to improve; the expectoration gradually ceased; and he left the hospital on the 15th January. The day before his discharge, it was noted that there was normal resonance over the right lower lobe; inspiration was vesicular and free from crepitation. The only abnormal sound was somewhat prolonged expiration over the right back.

Now here is a case in which a frequently recurring hæmoptysis, extending over a period of twelve years, is pretty certainly not associated with organic disease of the lung either as a cause or a consequence. When he came in, the physical signs indicated that the lower lobe of the right lung was partially consolidated, probably by blood, which had been driven into the extreme bronchi and air-cells, where it appears to have decomposed and become fetid. This blood was gradually expectorated; the lung has recovered its normal condition; and the man has been restored to his usual state of health.

Although I have long known that hæmoptysis not unfrequently occurs unconnected with phthisis, it is only recently that I have learned that pulmonary hemorrhage is an occasional exciting cause of phthisis. Laennec taught us to believe that, when profuse hæmoptysis is quickly followed by the symptoms of a rapid phthisis, tubercles were latent in the lung and caused the hemorrhage. Niemeyer has lately revived the doctrine, which was accepted before the time of Laennec, that a copious pulmonary hemorrhage, in a person previously healthy, may be an exciting cause of phthisis. (See Niemeyer's "Text Book of Practical Medicine," translated by Drs. Humphreys and Hackley, of New York.) Niemeyer's doctrine is, that a portion of the blood, being driven down to the ultimate bronchi and air-cells, acts as a foreign body, and sets up inflammatory and degenerative changes in the lungs, from which the patient may slowly recover, or which may result in cheesy deposits, excavations, and fatal phthisis.

In the second volume of the Clinical Society's "Transactions," there are two interesting papers; one, by Dr. Christian Bäumler, on "Cases of Hæmoptysis followed by Inflammatory Changes in the Lungs;" another, by Dr. Hermann Weber, on "Hæmoptysis as a Cause of Inflammatory Processes and Phthisis." These papers are confirmatory of Niemeyer's doctrine; and I am sure that in the main the doctrine is true, for it has rendered intelligible to me some facts in my past experience which before I could not comprehend.

On the 10th May, 1867, I first saw a married lady, aged about 25, who a month before, during a violent fit of coughing, had brought up a large quantity of blood. Since the hæmoptysis, she had been weak and ill, but not confined to bed. I found all physical signs normal at the upper and front part of the chest; but, over the right base at the back, there were some dulness on percussion, and rather loose and large bubbling rhonchi. The family history indicated no tendency to phthisis. The history and the physical signs were not those of tubercular disease, of ordinary pneumonia, or of ordinary bronchitis. I have no doubt that, consequent on the pulmonary hemorrhage, blood had been driven into the lower lobe of the right lung, and had there excited inflammatory changes. I saw this lady occasionally for some months, during which she gained strength, but the physical signs remained unchanged. I have heard quite recently that her health has continued to improve; but her medical attendant in the country says there is still dulness and crepitation over the right base, and still absence of abnormal physical signs over the upper and front part of the chest. There is reason to hope that ultimately she may recover from the accidental results of the pulmonary hemorrhage, though the long continuance of the physical signs gives to the case a somewhat serious aspect.

A few months ago, I saw a case in which the fatal consequences of pulmonary hemorrhage were of an unusual character. A lady, about 40 years of age, healthy, but of a somewhat delicate frame, during the early part of September, had a troublesome dry cough, and one day she began to cough up a large quantity of florid blood. So rapid was the hemorrhage, that at one time she was nearly suffocated, and the active bleeding continued for several hours. I first saw her at Eastbourne, on the 17th of September, a week after the onset of the bleeding. She was then expectorating small quantities of semi-solid dark blood, which had evidently been for a considerable time out of the vessels. Percussion and auscultation over the front of the chest gave quite normal results; and, as the chest-walls were thin, the air could be heard entering the lung with great clearness. Over the right lower lobe at the back, there was marked dulness on percussion, and, on auscultation, rather fine crepitation, with diffused blowing expiration. The inference was, that the right lower lobe had been partially consolidated by blood driven into its tubes and vesicles. Percussion and respiratory sounds over the left back were quite normal. The pulse and breathing were somewhat quickened, but there was no febrile excitement. A few days afterwards, I heard that the chest symptoms were better, but that the left leg below the knee had become painful and swollen, though not inflamed; and I suggested that probably some coagula from within the pulmonary capillaries, having entered the circulation, had led to the formation of coagula within the capillaries and veins of the leg. On the 4th of October, I again saw the patient. I found that, during the last few days, the painful swelling of the leg had entirely subsided, but this had been succeeded by urgent dyspnœa. The breathing was still upwards of 40 in a minute; the pulse rapid and feeble; the countenance anxious; the face pale; the lips livid. There was now normal resonance over the lower lobe of the right lung, the air entered freely, and there was scarcely a trace of crepitation left. Over every other part of the chest, percussion and respiration were quite normal. The blood which, for a time, had blocked a portion of the lung-tissue, had been expectorated, and evidently there was nothing in the state of the lung to explain the alarming dyspnœa. What, then, was its cause? Probably, a fibrinous clot, from the temporarily obstructed vein in the leg, had made its way to the right side of the heart, and there was embolic obstruction of the pulmonary artery. The dyspnœa was due, not to want of air in the lungs, but to want of moving blood. After my visit, the dyspnœa continued and increased, and she died early on the morning of the 6th October.

There was no inspection of the body, but there can be scarcely a doubt as to the sequence of events. Pulmonary hemorrhage led to impaction of blood in the lower lobe of the right lung; this was soon expelled; but, meanwhile, either blood materials absorbed from the air cells by the pulmonary capillaries, or, probably, coagula formed within the pulmonary capillaries while the blood was rendered stagnant by pressure from without, passed into the circulation, and led to the formation of coagula within the capillaries and veins of the leg; thence coagula found their way back to the right side of the heart, where they increased and caused a fatal obstruction to the circulation.

You see that pulmonary hemorrhage is a subject which demands a careful and diligent study. Each case requires a minute and accurate investigation before we can venture to give an opinion as to the cause or the probable consequence, or the appropriate treatment. There are few cases in which an off-hand inconsiderate opinion is more likely to be erroneous, and, therefore, unjustifiable, than in these cases of blood-spitting. The fact that hæmoptysis is often associated with serious organic disease, either as a cause or a consequence, renders it the more important that the antecedents and the circumstances of its occurrence should, in every case, be thoroughly investigated.

The treatment of pulmonary hemorrhage will vary somewhat according to the nature of the exciting cause. There are, however, certain general rules which are applicable to all cases. The patient must remain as absolutely at rest as possible. Bodily exertion or emotional excitement, by increasing the force and frequency of the heart's contractions, is apt to increase the bleeding, or to provoke a return. The patient should lie still, and neither move, speak, nor cough more than is absolutely necessary. A cough is a powerful provocative of pulmonary hemorrhage, and it is sometimes desirable to allay irritation and cough by a dose of morphia, or by a cautious inhalation of chloroform from time to time. Do your utmost to prevent the patient from being alarmed and excited by the sight of the blood. Let him have a plentiful supply of cool fresh air. Let him keep lumps of ice in the mouth and swallow the cold water. Sometimes the application of ice to the chest has a powerful effect in arresting the bleeding. It should not be continued long enough to chill the patient; and it is more likely to be effectual in exciting sympathetic contraction of the deeper arteries when applied for a short time over different parts of the chest, both front and back, than when applied continuously over one part. Gallic acid I believe to be one of the best styptics in cases of pulmonary hemorrhage. It may be given in doses of ten grains, in the compound infusion of roses, every three hours, if the bleeding be copious, and less frequently as the bleeding subsides. Another useful styptic is the liquid extract of ergot. This, too, may be given every three hours, in doses of half a drachm. It may be given alone or combined with the gallic acid mixture. The oil of turpentine in 20-minim doses sometimes succeeds when other remedies fail; and I have seen the bleeding quickly arrested by the inhalation of turpentine vapour. We directed our patient, Herring, to inhale, first turpentine, and subsequently creasote, for two reasons: first, to correct the fetor of the expectoration and the breath; and, secondly, to promote the expulsion of the decomposing blood from the lung, and thus prevent the risk of mischief from its retention. You will find the inhalation of turpentine vapour an excellent expectorant in this and other cases where the object is to expel accumulated material from the air passages. An emetic of sulphate of zinc may sometimes be given for the same purpose. Dr. Weber, in the paper before referred to, recommends a combination of antimony and ipecacuanha as an emetic, partly to expel blood from the lung, and partly to arrest bleeding.—British Med. Journ., Feb. 12, 1870.

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Clinical Lecture on Various Subjects. By James Paget, F. R. S.

Mr. Paget (on Wednesday last) commented upon several of the cases admitted under his care during the preceding week into the accident wards.

Fracture of the Femur.—In reference to a man, aged 44, suffering from fracture of the femur between the middle and lower thirds, Mr. Paget made some remarks on the treatment of this injury, advocating strongly the American[1] plan of suspending the limb in a sort of trough splint by cords passing upwards and forwards, so that the line of traction forms an angle with the axis of the femur. The whole limb is raised from the bed, and the knee is a little bent. Mr. Paget prefers this apparatus to the long straight splint for the following reasons. Its use is followed by less shortening; it is much more comfortable; it allows the patient to move the body without in any way disturbing the injured limb, and thus it does away with the necessity of prolonged recumbence, an advantage which Mr. Paget thinks of no mean importance, especially in old persons.

Retention of Urine.—A man, aged 29, was admitted for retention and dribbling of urine; the latter symptom had existed for six weeks. His bladder was much distended. An attempt to pass a catheter was unsuccessful, but he passed all his urine while in a warm bath after a dose of laudanum. In comparing the effects of catheterism and the warm bath, etc., in cases of spasmodic stricture, Mr. Paget enlarged on the necessity of great caution in using instruments, and on the increased risk of making false passages when the urethra is in a softened state from congestion and inflammation; and advised that the same reliance should be placed on opium, rest, and the warm bath for reducing the swelling of the urethral tissues in cases of spasmodic stricture, as for relieving the tumefaction of the nasal mucous membrane in ordinary "cold in the head." The use of the catheter should, Mr. Paget considers, be deferred if possible for a few days, as it was in this case, and then, when the irritability of the urethra has passed away, the organic stricture, if it exists, may be treated.

Inflamed Bursa Patellæ.—This was a case in which a fall on the front of the knee had been followed by inflammation and suppuration in the bursa and a phlegmonous inflammation of the neighbouring superficial structures. Mr. Paget said that this case would serve to illustrate the curious and hitherto unexplained fact that blows upon bursæ are much more liable to be followed by severe local inflammation and suppuration than are far more extensive contusions not involving these organs. Mr. Paget prefers to make *two* incisions into a suppurating bursa, so as to admit of very free exit for the matter.

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[1] Mr. Paget uses a modification of Dr. Hodgen's apparatus, devised by Mr. Bloxam, Surgical Registrar of the Hospital.

Compound Comminuted Fracture of Femur just above the Condyles.—A woman 63 years of age fractured her femur just above the condyles; a small wound near the seat of fracture gave exit to synovia, and the accident was soon followed by effusion into the knee-joint, with heat and inflammation of that part. Several years ago she fractured the same femur at the neck, since which accident the limb has been considerably shortened, and the heel has been raised as in talipes equinus. Mr. Paget remarked that oblique fracture of the lower end of the femur, like the corresponding lesion of the humerus, is often complicated with vertical fracture extending into the joint, as in this case. The treatment recommended, when synovia escapes from a wound in such a case, was that adopted in this instance; viz., sealing the wound with collodion, irrigation with cold water if the joint become painful, hot, and distended, and the application of a long splint.

Mr. Paget alluded to several other cases of minor interest, among which were the following.

Extensive Scalp-Wound Treated by Wire Sutures.—Mr. Paget mentioned this case in order to dispel the common belief that sutures are unadvisable in treatment of scalp-wounds. He considers that sutures in these cases do not add to the risk of erysipelas—a complication which is more likely to follow wounds of the scalp than wounds of other parts, however treated.

Fracture of the Nasal Bones.—The man, aged 80, was admitted, said Mr. Paget, simply on account of his age, there being no concussion or other urgent symptoms Mr. Paget advised his hearers to bear constantly in mind that old people sometimes die from the effects of injuries which would be of quite trivial importance in young subjects.

Severe Contusion of the Leg.—Mr. Paget drew attention to this case as illustrating all the phenomena of an extensive bruise; and showing, in addition, the formation of bullæ containing blood-stained fluid of the same nature as that to which the swelling and discolorations of a bruise are due. Mr. Paget remarked that these bullæ are usually associated with fracture, and are not commonly seen in cases of simple contusion.

In mentioning and describing a case of Pott's Fracture, Mr. Paget alluded to the desirability of endeavouring to ascertain, as an aid to diagnosis, the direction in which the breaking force had been applied in all cases of fracture.—British Med. Journ., Feb. 26, 1870.

MEDICAL NEWS.

DOMESTIC INTELLIGENCE.

The American Medical Association will hold its twenty-first annual session in Washington, D. C., on the 3d of May next, at 11 A. M. Secretaries of all medical organizations entitled to representation should, without delay, forward to the permanent secretary, W. B. Atkinson, 1400 Pine St., Philadelphia, a list of their delegates.

—

National Medical Convention for Revising the Pharmacopœia.—In compliance with a resolution of the National Convention for revising the Pharmacopœia, directing that the names of the delegates announced to the President of the Convention as having been appointed to attend the Convention, to meet on the first Wednesday of May next, at Washington, be made public in the newspapers and medical journals in March, the following names of delegates are now published, with the date at which their appointment was made known to the President, in the order of their announcement:—

May 27, 1869. St. Louis Medical College—A. Litton, M. D., J. S. B. Alleyne, M. D.

June 6, 1869. Maryland College of Pharmacy—Wm. G. Thompson, J. Faris Moore, Louis Dohme.

June 6, 1869. Missouri Medical College—Chas. O. Curtman, M. D.

June 25, 1869. St. Louis College of Pharmacy—O. F. Potter, M. D., Hubert Birum, M. D., Eugene L. Mariott.

June 25, 1869. Chicago College of Pharmacy—Albert E. Ebert, Henry Biroth, C. Lewis Diehle. Alternates—Jas. W. Mill, F. Mahle, M. D., Louis Storhl.

August 9, 1869. Jefferson Medical College—Jno. B. Biddle, M. D., B. Howard Rand, M. D.

Dec. 9, 1869. Medical Society of District of Columbia—Thos. Antisell, M. D.,

C. H. Lieberman, M. D., B. F. Creng, M. D.

Jan. 11, 1870. Medical College of Virginia—J. S. Wilford, M. D., R. S. J. Peebles, M. D.

Jan. 20, 1870. Massachusetts College of Pharmacy—Geo. F. J. Markoe, Thos. Dolliber.

Feb. 1, 1870. Medical Society State of New York—Caleb Green, M. D., Wm. Manlius Smith, M. D., Edward R. Squibb, M. D.

Feb. 3, 1870. College of Physicians of Philadelphia—Geo. B. Wood, M. D., Robt. Bridges, M. D., H. C. Wood, M. D.

Feb. 15, 1870. College of Pharmacy of the City of New York—Wm. Hegeman, Wm. Neirgard, P. W. Bedford. Alternates—Theobold Frohuein, Augustus H. Weismann, Geo. C. Close.

Feb. 16, 1870. National Medical College (Medical Department of Columbia College) Washington—Geo. W. Dore, M. D., Jno. C. Riley, M. D.

March 10, 1870. Medical Department of the University of Pennsylvania—Jos. Carson, M. D., Robt. E. Rogers, M. D.

March 18, 1870. Philadelphia College of Pharmacy—Wm. Procter, Jr., Jno. M. Maisch, Alfred B. Taylor.

The following letter has been received by the President, offering the use of a hall for the meeting and subsequent sittings of the convention:—

1407 New York Avenue,
Washington, D. C., Feb. 16, 1870.

Prof. Geo. B. Wood, M. D.,

My Dear Dr.: It affords me pleasure to inform you that at a recent meeting of the faculty of the National Medical College (Med. Dept of Columbia College, Washington), the following resolution was unanimously adopted:—

Resolved, That the Dean be instructed to tender to Prof. Geo. B. Wood, the President of the Convention to revise the Pharmacopœia, held in 1860, the college buildings for the meeting to be held in May, 1870, and to make the necessary arrangements therefor.

The building is centrally situated, in the vicinity of the principal hotels, and is well suited for the purpose.

Respectfully, your obdt. servt.,
Jno. C. Riley,
Dean of Faculty of National College.

Graduates in Medicine in 1870.—

University of Pennsylvania . .	113
Jefferson Medical College . .	160
Bellevue Hospital Medical College .	140
Massachusetts Medical College. .	39
Medical College of Ohio (Cincinnati)	56
Miami Medical College (Cincinnati)	36
Cincinnati College of Med. and Surgery	19
Buffalo Medical College . . .	41
Medical Dept. University of Nashville	58
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University of Maryland.—Dr. Christopher Johnston has been elected to the chair of Surgery, in the place of Prof. N. R. Smith.

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Medical College of Virginia, Richmond.—The course of lectures in the summer school of this institution will begin on Wednesday, March 30, and continue four months. The lecturers are Drs. M. L. James, Practice of Medicine; J. R. Page, Obstetrics; Wm. H. Taylor, Chemistry; F. B. Walkins, Diseases of Women and Children; John G. Skelton, Physiology; Geo. Ross, Surgery; James E. Williams, Mat. Med.; Z. B. Herndon, Anatomy.

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Summer Instruction in Philadelphia.—Since the publication of our last number we have received the following announcements of courses of medical instruction in Philadelphia during the coming summer:—

Diseases of Females.—Dr. F. H. Getchell will deliver a course of twelve lectures on the surgical diseases of females, at the Catharine Street Dispensary, commencing on Wednesday, April 13th, at 3 P. M.

Ophthalmic Surgery.—A course of lectures upon the eye will be given by Dr. Geo. C. Harlan at the class room of the Medical Institute, 920 Chestnut Street, during April, May, and June.

Summer Course of Medical Instruction.—Drs. W. H. H. Githens, R. G. Curtin, G. M. Ward, and De F. Willard, will commence their summer course of medicine April 4, 1870, at their class rooms, 921 Market Street. The course will consist of examinations and lectures.

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State Medical Society of East Virginia.—We understand that an effort has been made to reorganize a medical society in Eastern Virginia, to meet at Richmond.

Auxiliaries have been formed in several of the counties, and an invitation has been extended to the members of the faculty throughout the State, to complete the organization which, since the war, has ceased to exist.

In May next, the National Association will convene in Washington city, and it is desirable to accomplish the object in time to nominate delegates to that body, and especially to contribute to the general fund of medical literature of the country.

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Michigan University Medical Journal — This is the title of a journal conducted by the faculty of the medical department of Michigan University, the first number of which, now on our table, bears the date of March, 1870. We welcome it to our exchange list.

FOREIGN INTELLIGENCE.

Deaths from Chloroform.—The distinguished Edinburgh champion of chloroform contributes to the British Medical Journal (Feb. 26, 1870), " Remarks on a case of sudden death in ovariotomy while the patient was under the influence of chloroform." The patient was married, about 22 years of age, thin and emaciated. The tumour was as large as the pregnant uterus at the sixth or seventh month. Sir James Simpson administered chloroform upon a towel. On a post-mortem examination of the body, no disease could be found in the head or chest, or elsewhere. Sir James avoids stating the cause of death, but narrates 10 cases of death from shock, which he seems to think bear a strong resemblance to his own case. This is apparently as typical a case of death from chloroform as any that has ever occurred.

" We learn (Brit. Med. Journ., March 12, 1870) from a private source that on Wednesday, February 23d, another death from chloroform occurred in Professor Billroth's clinic at Vienna. This eminent surgeon was about to effect forcible extension of the knee on a female aged 21, when, in consequence of chloroform narcosis, hardly complete, symptoms of asphyxia prevented his proceeding with the operation. The operator at once commenced artificial respiration. The patient breathed regularly during one minute ; but, before the interrupted operation could be continued, breathing became again irregular, and the pulse ceased to be perceptible. Tracheotomy was now performed, but to no effect, as the lungs only acted a few times. Finally, venesection and electro-puncture were tried, but all in vain. The post-mortem examination showed small vegetations on the valves of the heart. It is to be noted that the pulse ceased to be perceptible before respiration stopped."

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Large Doses of Quinine in Relapsing Fever.—Three cases of relapsing fever admitted into St. Bartholomew's Hospital have been treated with large doses of quinine immediately before the anticipated relapse. Two cases received each ten grains on the afternoon of the thirteenth and morning of the fourteenth day of the fever, and five grains for four succeeding mornings. The third case had one ten-grain dose on the thirteenth day, followed by four five-grain doses. The results were most satisfactory, as in none of the patients thus treated did the relapse occur. As yet, there has been no opportunity of treating others in the same way. No other patients have been treated with quinine.

Of eight other cases that occurred in this hospital, in six the second remission was accompanied by a greater fall of temperature than in the first ; and, as the prostration following the remission seemed to be in proportion to the sweating and sudden fall of temperature, the danger of death is in great measure obviated, as well as the convalescence shortened by several weeks, if the relapse can be prevented.—British Med. Journ., Feb. 26, 1870.

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Local Treatment of Croup by Lactic Acid. —A knowledge of the power possessed by lactic acid to dissolve fibrinous exudations induced Dr. ADOLPH WEBER to try it in cases of croup. At first he used it only after the operation of tracheotomy, partly with a view to keep the tracheotomy tubes clean, and partly hoping that the lactic acid might affect the membranes which extended downwards into the bronchi. The results were so favourable in both respects that he proceeded to try it in severe cases of croup before having recourse to tracheotomy. Since then he has not once had occasion to operate, and has not lost a single case of croup. In some very severe cases in which inspiration and expiration were equally obstructed, and the condition of the faucus indicated an abundant fibrinous exudation in the trachea, the difficulty of breathing was completely relieved within seven to ten hours of using this remedy, and two or three days after no trace of the local affection remained.

During the treatment there was not, as is generally the case, an expectoration of tough membranous sputa, but gradually the whistling barking inspiration and expiration were replaced by distinct rattling noises; the voice, before quite suppressed, began to assume a hoarse timbre, and considerable quantities of loose white frothy phlegm were expectorated during the fits of coughing, until at last the struggle for breath quite ceased, and the disease assumed more the character of a catarrhal affection of the throat.

The treatment consists in the local application of the remedy to the windpipe by means of inhalation. The patient is made to inhale a solution of lactic acid (15 to 20 drops in half an ounce of water) at first every half hour, and afterwards, when the respiration improves, every hour or every two hours a solution of 10 to 15 drops in half an ounce of water.

The inhalation is discontinued as soon as the dyspnœa has subsided, and to promote expectoration chamomile-tea is exhibited.

In using the inhalation care must be taken that the vapour does not affect the eyes or face.

With this treatment was conjoined the internal exhibition of carbonate of soda every half-hour or every hour, which was thought to exert a beneficial effect upon the exudation.—Med. Times & Gaz., Jan. 22, 1870.

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Employment of Phosphorus in Psoriasis.—Of late, several experiments with phosphorus have been made in the various hospitals of Paris. It has been tried in some cases to which it had not until now been applied. Amongst others, we may just mention the employment of phosphide of zinc in locomotor ataxy, and phosphorus in psoriasis. This last trial is due to Professor Hardy, the well-known dermatologist. M. Hardy had previously employed the substance in similar cases, and had renounced its use; but during the last few months he has resumed his researches. There are now five patients in his wards—three female and two male—subjected to this mode of treatment. One of the female patients, aged sixteen, and affected with general psoriasis, has taken every day since December 16th a teaspoonful of the following compound—oil, 150 grammes;[1] phosphorus, 10 centigrammes: and has been rubbed every night with a pomade composed of—hog's lard, 100 grm.; phosphorus, 1 grm. Under the influence of this treatment the scales have completely disappeared. No unusual symptom has been observed.

The other two females have not taken the substance internally, M. Hardy having limited the experiment to friction with the pomade. The amendment is, however, obvious, though the scales have not yet entirely disappeared. The treatment was commenced in the beginning of January.

With regard to the two men, the entire plan of treatment, internal and external, was instituted about a fortnight ago. They are also doing exceedingly well.

This mode of treatment deserves to be noticed on account of its novelty, and of the extremely favourable results which it has afforded until now. It requires, however, to be more extensively employed before any definite judgment can be formed. It also remains to be seen how it will turn out as compared with the other medicaments which are now generally employed here, such as cade oil, tar pomade, nitric-acid pomade, &c. Another point which requires to be settled is whether psoriasis will return after a successful course of treatment, and, if so, at what interval. This can only be decided by time.—Lancet, Feb. 19, 1870.

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Prurigo treated by Ointment of Iodoform.—Prof. Tanturri, of Naples, has used the ointment of iodoform in obstinate prurigo. This compound, first brought prominently into notice by Bouchardat, is now employed extensively not only for glandular enlargements, but also, owing to its anæsthetic properties, in skin diseases accompanied with intense pruritus; its odour is much more agreeable than that of chloroform, resembling that of saffron. Moretin and Humbert recommend it for internal use as possessing all the advantages of iodine, of which it contains 90 per cent., without any of its inconveniences. It exercises upon the sphincters a local anæsthetic effect so powerful that defecation is sometimes performed unconsciously after its use; it therefore forms an admirable suppository in cases of tenesmus, hæmorrhoids, etc. Moûtre's formula is—iodoform, powdered, gr. xx; cocoa butter, ʒj; melt and mix for six suppositories. For frictions the ointment is used in the strength of ʒj to the ounce of simple ointment.—Med. Times & Gaz., Jan. 22, 1870.

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[1] A gramme is about 15½ grains troy; a centigramme is one-hundredth of a gramme.

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Eczema of the Legs.—A distinction is drawn by Dr. TILBURY FOX between those cases of pustular eczema in which the pus-formation is accounted for by the intensity of the inflammation, and those in which it is not to be so explained, but rather upon the supposition of a pyogenic habit of body; and, in elderly and old subjects, the existence of a strumous tendency is thought to be often overlooked. Whilst cod-liver oil and the like are given freely to the latter class of cases, one point in the local treatment insisted upon is the avoidance of any stimulant or irritant applications; and the application of the compound lead-ointment of the old London "Pharmacopœia," during the crusty and discharging stages, constantly applied, so as to exclude the air, and subsequent strapping with diachylon or leather, are approved. There is a woman now in the hospital who has had an eczema impetiginoides of the leg for twenty-five years, off and on, and becoming much worse of late, who is now practically well of her ailment from the adoption of the above treatment.—Brit. Med. Journ., March 12, 1870.

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Parasiticides. Dr. MCCALL ANDERSON prefers to use ointment of stavesacre for body-lice. Powdered stavesacre, one ounce; lard, three ounces; digest for three hours. For scabies, he thinks sulphur the worst remedy, and prefers sponging the whole body, night and morning, with a solution of chloride of lime; or using an ointment composed of liquid storax, one ounce; lard, two ounces; mix and strain. These only kill the acarus, and do not irritate the skin. He advises epilation in sycosis and in favus. Clothing may be disinfected by exposing to the fumes of sulphur or very hot air.—Med. Press & Circular, Feb. 9, 1870.

Burns and Scalds in Children.—M. GIRALDES lately made some interesting clinical remarks on this subject at the Hôpital des Enfants Malades. These lesions, he said, are very frequently met with in childhood, and formed one of the difficult points of surgical practice among children. How many burnt children only crossed the wards to be carried into the dissecting-room! Numerous were the difficulties encountered in the treatment, and therefore he thought it necessary to insist on a few points connected with the subject.

First, from a clinical point of view, the danger of a burn depended on its extent. Thus, if two cases were taken, one in which a leg had been completely roasted, even to Dupuytren's sixth degree, and another in which there existed a more superficial but far more extensive burn, the former had a much better chance of ending favourably.

Beyond this, the lesions were extremely varied. In children they were generally produced either by the clothes taking fire, or by a boiling liquid (water, beef-tea, &c.), or by the children falling into the fire. Various situations of the body—the extremities, the chest, the head, &c.—might thus be injured. Insisting on the less perilous character of deep burns, as compared with extensive ones, M. Giraldès quoted the example of lunatics who, wishing to destroy themselves, introduce their heads into a stove, and get their skulls roasted even to the cerebral substance, and yet eventually recover.

It was unimportant to go through a regular description of the lesions, according to the different degrees pointed out by Dupuytren or Webster. The clinical points of the question were of far greater interest. Thus, it was most important to study the general condition which attended burns of the second and third degree, and was accompanied by various symptoms resulting from shock, exhaustion, and nervous reaction. It entailed congestion, coma, algidity, and often ended in death. Many children brought into the wards of the Hôpital des Enfants, with extensive burns, were quite cold, could scarcely breathe, and perhaps died in twenty-four hours. Congestion of the lungs and of the brain might be developed, and at the post-mortem these lesions were detected, together with spinal congestion, serous effusion in the meninges, &c. The depression of the nervous force thus produced was an imminent cause of danger; and so, in presence of an extensive burn, the first duty of the surgeon was to re-establish circulation and heat, and thus produce decongestion of the parts.

Sometimes death would not take place in the space of twenty-four hours; the children would survive during two or three days, and then symptoms of reaction were observed. And when the disease lasted some time more, ulceration of Peyer's patches, or other parts of the alimentary canal, would be found among the injuries noted after death.

It occasionally happened, however, that, notwithstanding the deepest or most extensive burns, the little patients would resist the injuries and shock. Locally, other phenomena would then be observed. On the burnt spots there would be a process of exudation, granulation, softening, and mortification. Abundant suppuration would follow; and the children would die through this continual drain. This suppuration formed the second difficulty against which the surgeon's efforts should be directed. The suppuration should be assisted and regulated. Amidst this process of suppuration the patients were seen to become cachectic and emaciated, losing their strength, &c. The suppuration became serous and exhausting.

This was not all. After suppuration arose a third difficulty, which again required all the earnest attention of the surgeon—namely, cicatrization. When the burn was situated in the neighbourhood of the joints, and of the natural openings, such as the mouth, &c., most distressing, and sometimes hideous, deformities might occur, and must be obviated, if possible. Forced flexion, adhesions, closure of the natural orifices, &c., might be produced.

With regard to treatment, there existed a large number of means and proceedings. The first idea which occurred to the mind was the application of cold or other agents which might abate the inflammation thus momentarily kindled. This was an excellent means, but could only be applied to burns of the limbs, and not to those of the chest, abdomen, &c.; because it would bring on general injuries in the internal viscera, which would complicate the condition of the patient.

The proceedings which consisted in shutting up the injured parts from the contact of air were more reliable, and of more extensive application. It might be a thick layer of cotton-wool, or a coating of gum arabic, of a fatty matter, &c. During the American war, slices of fresh bacon were employed with the best results. The fatty matter might be combined with an astringent substance. Thus the oleo-calcar liniment, or combination of oil with lime-water, was very generally employed.

When the burn was not limited to a mere rubefaction, but extended deeply, and brought on mortification, suppuration, &c., the suppuration was sometimes extremely difficult of cure, and resisted the ordinary means—such as fatty substances, the oil- and lime-water liniment, &c. In these, as well as in all other cases, M. Giraldès has completely abandoned the use of the liniment and has adopted a means which affords the most excellent results in burns of the first degree, and favourably modifies suppuration when it occurs. It consists in a solution of sulphate of zinc, which forms a cheap and ready remedy. The solution of zinc is formed of one gramme of the sulphate and one hundred grammes of water, and it is applied by means of wet compresses. The granulation and cicatrization form rapidly under the action of this remedy; and when there is any proliferation of cheloid, M. Giraldès cauterizes with nitrate of silver. When circumstances, topographical or otherwise, prevent the application of the ordinary means, M. Giraldès employs hog's lard simply, or a pomade formed of lard and sulphate of zinc.

Referring to the protracted cases which are so severely trying to the patient, M. Giraldès remarked that it was extremely important to support the patient by nourishing food, rum, coffee, &c. With this and the employment of proper local means satisfactory results might generally be obtained.

Before concluding his lecture, M. Giraldès briefly alluded to those cases in the neighbourhood of the joints in which the process of cicatrization might produce considerable deformities, and in which it was often desirable to employ splints or other contrivances. But the application of such apparatus to the neck was of extreme difficulty, and it was in this situation that the most varied disorders and deformities were to be seen. He had had a case under treatment in which there was complete retraction of the lower lip.—Lancet, Feb. 19, 1870.

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Successful Ligation of Common Carotid.—The Allg. Med. Central Zeit., of December 1st, 1869, contains the case of a young man who, in a quarrel, was stabbed in the neck. Dr. Marquardt, of Thorn, found behind the angle of the right lower jaw a solution of continuity an inch long, running in a horizontal direction, and leading into a kind of sac downwards and inwards. The patient had swooned from loss of blood. An attempt was made to tie the external carotid in the wound, but without success; and it was at once resolved to tie the common carotid. This was done easily, and the patient made a good recovery. He was hale and strong a month after the operation, the ligature having come away in twenty days.—Lancet, Jan. 22, 1870.

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Nephrotomy.—On Thursday, Feb. 3, the operation of cutting into the kidney for removal of renal calculus was performed by Mr. Durham at Guy's Hospital. The theatre was crowded with students and others anxious to see so rare an operation. We believe, indeed, that there is only one instance of its performance recorded, and that was by a surgeon of Venice upon an Englishman some hundred and fifty years since. Two or three stones were then extracted to the great relief of the patient, a urinary fistula remaining in the loin. Owing, doubtless, as much to the uncertainty of the diagnostic signs of renal calculus as to the supposed risks of the procedure, the operation fell into oblivion, until a paper read before the Medico-Chirurgical Society last year by Mr. Thomas Smith, of St. Bartholomew's Hospital, again brought the subject before the notice of the profession. Although Mr. Durham's bold attempt ended in disappointment, we saw enough to convince us that, as far as cutting down upon the kidney is concerned, there is neither great difficulty nor any apparent grave risk in the proceeding. Mr. Durham made his incision along the edge of the erector spinæ, from the pelvis to the eleventh rib, and quickly reached the hilus of the kidney without difficulty, and with little or no loss of blood, but no stone was found, although the symptoms previously manifested had been such as are considered characteristic of stone in the kidney. The hilus of the kidney and the ureter, for the space of an inch and a half, were thoroughly examined, but not opened, no stone being felt, and their general appearance, as well as that of the kidney, being perfectly healthy. So far from the operation having been injurious, five days later the woman expressed herself as being more free from pain than she had been for a long time! Full details of the case will be published whenever it may be considered to have terminated, whatever the termination may be.—Med. Times & Gaz., Feb. 12, 1870.

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Excision of Kidney.—Dr. Simon, of Heidelberg, has performed a surgical operation of considerable interest. In a woman upon whom he had performed ovariotomy there remained a flow of liquid issuing from a distinct situation in the abdominal cicatrix. All remedial proceedings, and even autoplasty, were successfully tried to no purpose. The character of the fluid was then investigated, and was found to be urine, proceeding from a lesion of the ureter which had occurred during the operation. Dr. Simon then undertook a series of experiments on animals with the object of determining whether a kidney might be removed without any evil consequences to the economy. The end of these researches was the decision to extirpate the kidney, and the operation has been performed with the most satisfactory results.—Lancet, Feb. 5, 1870.

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Retained Dead Fœtus.—Dr. Alfred McClintock exhibited to the Pathological Society of Dublin an embryo five or six weeks old, which had not been expelled from the uterus until the seventh month of gestation. The patient, who was mother of several children, had suffered for some time from severe uterine hemorrhages. These were found to depend on the presence of the dead fœtus. Dr. McClintock called attention to the absence of any evidence of putrefaction in connection with the specimen. He also alluded to the importance, from a medico-legal point of view, of arriving at a correct opinion regarding a case of the kind, where an embryo, whose vitality had long since ceased, was retained, perhaps for months, in the uterus.—British Med. Journ., Jan. 29, 1870.

Nail passed safely through the Alimentary Canal of a Baby.—Mr. **Blower** relates (British Med. Journ., Feb. 26, 1870) the case of a baby brought to him in a state of suffocation. "Passing my fingers into the fauces, I felt a piece of iron right across. A slight touch dislodged it; and, to my great dismay, it went down. The child immediately recovered its breath, and was soon at the breast. I desired the mother to give nothing but the breast-milk, and to watch carefully the motions. The next day, the poor woman came with the nail which I have now before me. It is two inches long, and a quarter of an inch broad at the head; the point is rather blunt."

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Scarlatina.—In the Whitechapel district, the deaths from scarlatina during the first three quarters of 1869 were at the rate of 247 to 100,000, the corresponding number for all London being 152. These proportions are considerably more than double the annual mortality from the same disease for the preceding nineteen years.—Brit. Med. Journ., March 12, 1870.

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Smallpox and Vaccination in Paris.—The prevalence of smallpox in Paris has been attended by a failure in the supply of vaccine matter. The government has therefore granted the Academy of Medicine 2000 francs, in order to keep up a supply from the heifer. The Municipal Council of Paris, on the proposal of the Prefect of the Seine, has voted 10,000 francs for the organization of a system of gratuitous vaccination and revaccination at each of the *mairies* of Paris. The Prefect has given notice to each of the mayors of Paris that, on and after March 2d, and throughout the prevalence of the present epidemic, vaccination from the heifer will be performed at each *mairie* in turn, from the heifer. The inhabitants of Paris are availing themselves of the opportunity to a very great extent. On one morning of this week, as many as two thousand persons presented themselves for vaccination at one *mairie* alone.—Brit. Med. Journ., March 12, 1870.

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Cause of Œdema.—We suppose that if any of our readers were asked what would be the effect of suddenly applying a ligature to the principal vein of a limb, or in any other way arresting the return of the blood through it, the immediate answer would be, that congestion would occur, which would relieve itself by serous exudation through the coats of the vessels; or, in other words, that œdema of the whole limb below the point at which the circulation was arrested would take place. If, however, it were further urged that cases daily come under observation in which particular veins have become obliterated by the pressure of tumours or what not, and yet that such obliteration is not followed by any œdema or dropsical accumulation, the stereotyped reply would be, that in such cases the retardation of the blood current had occurred so slowly that sufficient time had elapsed to enable the collateral channels to become dilated, and to convey by a thousand smaller vessels the blood which was previously transmitted by one. At a recent *séance* of the Académie des Sciences, however, M. **Ranvier** adduced certain experiments which, if they do not absolutely disprove the ordinarily received views, at least are strongly suggestive of the suspicion with which we should regard all traditional dogmas, however high the authority by which they are supported.

The views above mentioned seem to date from the experiments made by our countryman, Richard Lower, who, in his "Essay on the Heart and on the Colour and Movement of the Blood," first showed that tying the vena cava was followed by ascites, and ligature of the jugular veins by œdema of the head, with copious flow of saliva and tears, resembling, as he says, the salivation produced by mercury, terminating in two days in suffocation. Although apparently conclusive, these experiments were not universally accepted, and even so recent an observer as Hodgson states that he had seen several instances in which the femoral vein was obliterated, and one in which it was included in a ligature, without any unfavourable consequence. In 1823, M. Bouillaud, in an important memoir that was published in the "Archives Général de Médecine," again took up the views of Lower, and corroborated them by the details of cases in which, when œdema affected a certain portion of the body, he found the corresponding vein obliterated either by a tumour or by a clot which had formed after delivery. From the period when this memoir appeared the general impression has been that the obliteration of the principal vein of a part sufficiently accounts for œdema into its tissue. M. Ranvier, however, appears to have been dissatisfied with the accepted views on the subject, and proceeded to repeat the second experiment of Lower. He tied the two jugular veins at the interior part of the neck in a dog and in a rabbit. To his surprise, however, these animals presented no discharge of tears, no salivation nor any œdema of the head. In other experiments he ligatured the femoral vein immediately below the crural ring in the dog; but here again no œdema occurred either on the day of operation or at any subsequent period. These results, consequently, were in accordance with those observed by Hodgson in man. Lastly, he applied the ligature to the inferior vena cava, but still no œdema occurred. He then conceived the idea of favouring the production of dropsy by paralyzing the vaso-motor nerves, and, recalling the experiments and observations of M. Claude Bernard, he divided the sciatic nerve on one side in a dog, whose vena cava inferior had previously been tied. On this side a considerable degree of œdema immediately supervened, whilst the opposite hind limb remained in its ordinary condition. This remarkable experiment was performed three times, and on each occasion with the same results. From these experiments M. Ranvier believes that he is justified in concluding that mere ligature of the veins does not, in the dog at least, produce œdema; but that after obliteration of the veins, dropsy may be caused by section of the vaso-motor nerves. The same probably holds good in the case of man, and it is easy to comprehend how important are the practical results that may follow the application of this view.—Lancet, March 12, 1870.

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Puerperal Diseases.—At a meeting of the London Obstetrical Society, Dr. Braxton Hicks read a paper on Puerperal Diseases, based on reports of eighty-six cases occurring after simple labour in private practice. He showed that in more than three-fourths of these cases the patients had been exposed to some kind of animal poison (in thirty-six cases to that of scarlet fever); and endeavoured to impress upon his hearers the great importance of removing the sources of such poisons from the neighbourhood of parturient women.—Lancet, Feb. 19, 1870.

Mortality as dependent upon Defective House Construction.—A lecture on this important subject was recently delivered by Professor Gairdner before the Philosophical Society of Glasgow. In this he pointed out the causes and evils of overcrowding, and why this should be so much more injurious in towns than in country districts, inasmuch as in the former it was not merely the apartment but the area that was overcrowded. Dr. Gairdner insisted that eight points were essential to the proper construction of a house: 1. Adequate cubic space in the sleeping apartments; the only way of providing this being, in his opinion, to throw the responsibility for overcrowding upon the owners, and not, as now, upon the occupiers. 2. Proper means of separation and privacy for the sexes within the houses; and in regard to this, while prescribing one room tenements as wholly inadmissible in a well-regulated town, he yet advocated their permission in such exceptional cases as of a newly-married couple, an old couple whose children had left them, or in the case of widows. 3. Proper means of access; in speaking of which he adverted to the horribly filthy and injurious plan of closing-in common stairs at the top, and ventilating all the water-closets in the tenement into them. 4. Proper lighting as well as ventilation of both rooms and passages. 5. Adequate privy accommodation. 6. Adequate water supply. 7. Baths and wash-houses. 8, and last. Proper airing and recreation ground.—Edinburgh Med. Journ., March, 1870.

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Relapsing Fever in Edinburgh.—This fever has at last broken out in Edinburgh in two different localities, without, we believe, any contagious influence being traceable in either case. The history of this outbreak, carefully recorded, as we hope it shall be, must form one of the most interesting episodes in the modern history of fever, as well as a not unimportant contribution to the vexed question of change of type.—Edinburgh Med. Journ., March, 1870.

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Transfusion.—This operation has been successfully performed by Dr. Beatty, Colles, and McDonnell, of Dublin, in a case of uterine hemorrhage. About ten ounces of blood were injected, taken from the husband of the lady.

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Though at first we entertained the preconceived view that little could be gained by an American edition of any work upon physiology, we now hold to the very opposite opinion. It has features which strongly demand recognition, and we regard it as a work upon physiology, both human and comparative, of great merit, one which will be chosen by teachers in schools and students in natural science as admirably adapted to their wants. The student of medicine will be attracted by it, as it presents a concise and comprehensive summary of modern physiological science, and the practitioner of medicine will be pleased with it, since every topic within the whole range of the science of life is noticed, to greater or less extent, as its importance demands.—*Buffalo Med. and Surg. Journal*, Dec. 1868.

Though modestly claiming to be only the "Outlines of Physiology," a careful perusal of its contents will convince the student that the whole field has been thoroughly explored for treasures, new and old, and the entire domain of physiology, human and comparative, brought under closest scrutiny; so that no fact, experiment, or deduction of any importance, that has become known to the science of the present time, has been omitted. From what has been said, the reader will readily gather that the work of Mr. Marshall is regarded by us in a very favorable light. As already intimated, it quite fulfils, in our opinion, the author's design of making it truly *educational* in its character—which is, perhaps, the highest commendation that can be asked. The additions of the American editor are necessarily few, but always judicious; and we may congratulate him on having selected so excellent a text-book for the University classes.—*American Med. Journal*, Jan. 1869.

Another practical feature in the arrangement of the work is the demonstration of many physiological phenomena by practical illustrations in chemistry, thus embracing, as it were, the two sciences in the consideration of each subject. The improvements and additions by the American editor are but few, yet such as to contribute much to the utility of the book, rendering it, at present, probably the most complete and comprehensive work of the kind in the English language.—*St. Louis Med. Archives*, March, 1869.

We doubt if there is in the English language any compend of physiology more useful to the student than this work.—*St. Louis Med. and Surg. Journal*, Jan. 1869.

This made us hope that the physiology given us would be of the most practical and useful kind; and we found it to be so. It contains that kind of physiology which is most necessary to the practical physician and surgeon, although the book was originally planned for students of medicine and surgery. It will be seen that this is not a mere elementary text-book, but one better adapted to the advanced student, junior practitioner, and to all imperfectly educated physicians and surgeons. It is clearly and beautifully written, its perusal reminding one of the old pleasures which used to be afforded in reading Watson's Practice of Medicine. It lies constantly on our library table; we consult it frequently, and always with pleasure and profit.—*N. Y. Med. Gazette*, March 13, 1869.

Viewed in the light of a contribution to a particular department of Science, it has in its way no equal. Its plan of arrangement of subjects, as well as the thorough treatment of such subjects, is its real recommendation to such as desire to form a thorough, substantial groundwork-knowledge of physiology. Designed for purely educational purposes, the science is treated as dependent on comparative anatomy, chemistry, and physics, and successful pains are taken to interest as well as instruct. The importance of a more or less thorough knowledge of the allied sciences in enabling the student to appreciate the truths embodied in physiology, is now universally acknowledged by teachers, and it is with feelings of no small gratification that we welcome the work before us as the *beau-ideal* of one that ministers to such a necessity.—*New York Med. Record*, Feb. 1, 1869.

Though thus comprehensive, it is yet concise, the author having managed by careful condensation to keep it within the limits of a modern text-book, for which purpose it appears to us admirably adapted.—*Pacific Med. and Surg. Journal*, Jan. 1869.

The fact that Professor Smith edits the American reprint of this work, with valuable contributions of his own, from a belief that it will thus become the best text-book for his class in the University, is of itself high praise. The more closely we examine the work the more thorough is our conviction that Professor Smith has not estimated it too highly. The student feels this as he progresses in the work, and the feeling of warm attachment this experience gives him for the author enables him the more readily to assimilate its contents. It is a most attractive work upon physiology, and with the many advantages it possesses as "an educational work" we do not see what is to hinder it from becoming a text-book in our medical colleges generally.—*Nashville Journal of Medicine and Surgery*, Feb. 1869.

We shall proceed to point out, in as brief a manner as possible, the peculiarities of this really splendid work. On this special branch of medical science, as a text-book for the student or a work of reference for the practitioner, it is unequalled. In conclusion, we can only say, that it is well worth the attention of the profession; every medical man should have it as a work for reference, and every student of medicine will find it the most complete of any ever issued upon the subject.—*Dominion Med. Journal*, Dec. 1868.

HENRY C. LEA, Philadelphia.

THE MEDICAL NEWS AND LIBRARY.

VOL. XXVIII. MAY, 1870. No. 329.

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CLINICS.

CLINICAL LECTURE.

Clinical Lecture on Atresia Vaginæ, by T. Spencer Wells, F. R. C. S., Surgeon to Her Majesty's Household, delivered at the Samaritan Hospital, Jan. 12th, 1870.

Gentlemen: A young woman will be placed on the table directly; and as soon as she is under the influence of the vapour of bichloride of methylene, which Dr. Junker is administering, I propose to make an opening in the direction of the vagina, in front of the rectum and behind the bladder, where there is no opening now, into a tumour which can be felt by a finger passed into the rectum, and which I believe to be the uterus greatly distended by menstrual fluid which cannot pass away owing to the vaginal atresia.

I use the term *atresia*, rather than *occlusion* or *obliteration*, because it more accurately expresses the actual condition in this and similar cases. Occlusion or obliteration of a canal almost implies that the canal was once open, but has been afterwards closed. In many cases this has actually occurred. But in others, so far as we can ascertain, the canal never has been open. There has been a congenital defect, an absence of opening—ἀ and τρῆσις.

I only saw this young woman yesterday for the first time, at the request of my colleague, Dr. Day. He had at once detected what I believe we shall find to be the true state of the case; although three other medical men of considerable experience had considered the tumour felt by the rectum to be a fibroid tumour of the uterus, which, by its pressure downwards, had occluded the vagina. I am not surprised at this diagnosis, for the tumour felt by the rectum is extremely hard and nodular; yet I can detect an elastic yielding to pressure, which, taken with the fact of the absence of vaginal canal, and the excessive suffering

Published monthly by HENRY C. LEA, No. 706 & 708 Sansom Street, Philadelphia, *for One Dollar a year; also, furnished* GRATUITOUSLY *to all subscribers of the "American Journal of the Medical Sciences," who remit the Annual Subscription, Five Dollars, in advance, in which case both periodicals are sent by mail free of postage.*

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at the menstrual periods, leaves scarcely a doubt in my mind as to the accuracy of Dr. Day's diagnosis.

Now that the patient is well under the influence of the anæsthetic, and held in the lithotomy position, I pass a sound along the urethra into the bladder, and find the bladder pushed considerably higher, and more forward than usual. With the index finger of my left hand in the rectum, I feel just beyond the sphincter a hard, round, irregular swelling depressing the anterior wall of the rectum, pushing it towards the sacrum, and extending forwards towards the pubes. The labia and nymphæ are well formed. There is no hymen, but about an inch beyond the labia, the vagina—which at the orifice appears to be well formed—ends in a mass of dense unyielding tissue, so dense that the tumour distinctly felt by the rectum cannot be felt through this septum. Keeping my finger in the rectum, pressing my thumb against this septum, and holding this long, narrow knife with its back towards the bladder, I very cautiously pass it through the closed end of the vagina into the swelling against which my finger in the rectum is pressing. The knife passes a full inch before resistance ceases, and now you see a little viscid, dark-red, treacly substance oozing down the blade of the knife. I am quite safe, therefore, in enlarging the opening by a notch on either side as I withdraw the knife; and now, on introducing this conical silver canula, you see the thickened menstrual blood passing away. It is so viscid and ropy that I draw it in long cords, like glue, from the open end of the canula; and now that several ounces have come away—and pressure on the abdomen above the pubes helps it away more rapidly—I inject warm water, to which a little iodine has been added, until the whole of the dark fluid is washed away, and the iodine solution returns nearly pure. On withdrawing the canula, and passing my finger to make a little more dilatation, I feel what I believe to be the dilated uterine cavity; but there is no distinct cervix to be made out. The hard mass through which the finger passes is probably the upper portion of the vagina, contracted and blended in one indistinguishable mass with the cervix uteri.

I shall not insert any dilator, or tent, or drainage tube to-day, but the iodine injections will be repeated at intervals of six or eight hours; and, on any sign of the opening closing, either a liminaria tent or a silver canula will be made use of.

These are not very common cases, and it is curious that I had to do an operation almost precisely similar to this last week on a young woman now in the hospital, and for the third or fourth time. She was sent to me by Sir Henry Thompson some two years ago, and I did what I have done to-day, evacuating some twenty ounces of fluid. For five months she remained quite well, and menstruated regularly; then the vagina closed again, and after three months I had to repeat the treatment. I followed it up by tents, but they caused a deal of pain. After four months' regular menstruation we had another closure. So this time I have kept the vagina open by a silver canula, made with flanges, which open and keep it in position. None of the operations on this patient have been followed by any febrile symptoms or much pain. We have kept her two or three days in bed as a matter of precaution, and have used the iodine injections; but she has always been able to return home almost immediately. Even now nothing like a normal uterus can be felt by the rectum, and on passing the finger along the opened vagina it enters an irregular, ill-defined cavity, which offers no distinct resemblance to the canal of the cervix or the uterine cavity. Probably the uterus had been so long distended before the vagina was first opened that it has never properly contracted, or there may be some congenital malformation of the uterus contemporary with the vaginal atresia.

In these two cases the closure of the vagina is higher up, more complete, and accompanied by a more abnormal condition of the uterus than in the class of cases most commonly met with in our out-patient rooms and in private practice. The commonest case of all is a mere adhesion of one labium to the other—the labia majora or minora, or both. Sometimes this is noticed in an infant soon after birth—often not until the child is two or three or eight or ten years old, and then a nurse or mother washing the child observes the defect. Nothing can be simpler than the treatment. By firm pressure with a thumb on either side the labia are squeezed outwards—torn apart—and a connecting filamentous medium is seen to separate, with little pain to the patient, and with scarcely a drop of blood. A great service is rendered to the girl, and the mother is relieved of great anxiety. I once saw this condition after puberty leading to retention of the menses, and on separating the adhering labia a well-formed crescentic hymen was seen, over which the menstrual fluid freely escaped. I fancy that many of the so called cases of *imperforate hymen* are such cases of *atresia vulvæ* as I have just noticed. In early infancy or childhood vaginitis or infantile leucorrhœa is easily set up by inattention to cleanliness. The mucous membrane is blistered, and the apposed raw surfaces unite, just as they occasionally unite after labour, and have to be separated before sexual intercourse can be resumed. But we do occasionally, though rarely, see true cases of an imperforate hymeneal membrane. The membrane completely closes the orifice of the vagina, and prevents the escape of the menstrual fluid, which, retained behind, dilates the vagina, the uterine cavity, and the Fallopian tubes, possibly leading to fatal rupture, peritonitis, or hæmatocele. Sometimes, on separating the labia, the distended hymen appears as a red, tense, fluctuating cyst. But, if I may judge from my own experience, as well as from the literature of the subject, a true imperforate hymen is much less common than either a vulvar or a vaginal atresia, though more common than a true congenital absence of vagina—a very rare malformation, in which the rectum and bladder are only separated by their own walls, an instance of which may now be seen in a woman in this hospital, in Dr. Routh's ward. In this case the urethra is so widely open that it may easily be mistaken for the vagina; and it reminds me of a lady whom I saw some years ago with Dr. Farre, who had been married several years, but whose vagina was almost closed by a dense hymeneal membrane; and it was quite certain that marital intercourse had always taken place by the dilated urethra. We afterwards found that in this lady the vagina and uterus were both perfectly formed. About the same time I saw a young married lady with Dr. Farre, to whose parents a written opinion of considerable authority had been given against her marriage on the ground of malformation. As she was engaged to be married, Dr. Farre was consulted. He differed from the opinion which had been given, and, knowing that I was interested in such cases, kindly asked me to see the patient with him. When she was under the influence of chloroform, I made a careful dissection (after a short incision along the raphe of the perineum) in front of the anus, working with a probe and a blunt silver knife, and separating the bladder and rectum from each other for some little distance until we came into a perfectly well-formed vagina and felt a normal uterus. I scarcely remember an instance in which such complete relief, to a very distressing family trouble, was so readily afforded. The patient married, and has had two children since. In another case, where marriage was stopped by an occluded vagina, I believed the cause of the occlusion to be a fatty tumour which had formed in the right recto-ischiatic space, and I removed this tumour. It weighed nearly a pound. But the removal did no good further than to admit of a more complete examination, which led to the discovery that there was congenital absence of the uterus. I obtained Dr. Farre's valuable opinion in this case, and we both certified that there was no uterus, and that marriage ought not to be permitted.

Dr. Farre kindly assisted me in the diagnosis of another case which had puzzled me excessively. Dr. Irvine, of Stanmore, brought a young woman to me with a large abdominal tumour; and on making a vaginal examination (as I thought) I could feel no uterus. I then found that my finger had passed quite easily along the urethra into the bladder, and that the vagina appeared to be absent. At least a finger in the rectum and another in the bladder appeared to be separated only by thin layers of membrane. Yet, menstruation was said to be quite regular and free from pain. At first I thought that the menstrual fluid must come away through the bladder; but on examination during menstruation we found a minute aperture behind the urethra, just in front of the anus, from whence the fluid exuded. Taking this as a guide, I made a very cautious dissection until I came into a well-formed vagina, and felt a normal cervix uteri, which could not be felt through the rectum, as it was concealed by a large fibroid tumour, which grew from the right side and posterior part of the fundus uteri. I mention these cases merely as illustrations of different forms of atresia of the vagina. In works on congenital malformations of the female genital organs, you may find other varieties described.

In conclusion, I will just say a word as to the treatment of the menstrual retention which is dependent on any of the forms of atresia of the vagina. I suppose no one can doubt that a passage for the retained fluid ought to be made, and, if possible, so kept open that subsequent retention cannot occur. We know that this cannot be done without some risk. In some cases acute pelvi-peritonitis, or pelvic cellulitis, or uterine phlebitis, with high fever, pain, and vomiting, have followed opening of the canal and evacuation of the fluid, and have ended in death. But there are numerous cases on record where death has occurred after a similar train of symptoms before any operation had been performed. The fluid secreted and retained distends the uterine cavity and the canals of the Fallopian tubes, and escapes into the peritoneal cavity, either by rupture of one of the tubes or through the open end of the canal, or in some more indirect way, it leads to a peri-uterine hæmatocele or a pelvic abscess; a Graafian vesicle maturates and bursts, it is not grasped by the fimbriæ of the tube, and blood is effused into the cellular tissue between the ovary and the uterus; or there is general congestion of the venous plexuses in the neighbourhood of the uterus, and one of the veins gives way. To some such danger as this any woman is daily and hourly exposed, in whom a mechanical obstruction interferes with the escape of the menstrual fluid, and I think we ought to remove the obstruction as soon as possible.

It has been supposed by some that puncture by the rectum might be safer than opening the closed vagina—that the entrance of air and consequent putrefactive changes in the fluid not completely evacuated would be prevented by the closure of the sphincter ani; and several successful cases have been recorded where this practice has been adopted. I have before now expressed my opposition to this view. I cannot see that the intestinal gases, which would enter from the rectum into the emptied cavity, can be less injurious than atmospheric air. Of the two I should prefer the air without the fecal gas. And then the patient is left with a closed vagina—she is simply relieved for a time from the consequences of menstrual retention; whereas if you open the closed vagina you afford the same immediate relief, and render an additional service which may be a permanent relief. By a little care the opened canal may be kept open; and, if it should close through want of care, it may be reopened. It cannot be done without some risk, but the risk of leaving the patient alone is vastly greater.—Med. Times and Gaz., Jan. 22, 1870.

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Clinical Lecture on Injuries of the Head, by James Paget, F.R.S.—This subject was illustrated by two cases of injury of the head which have lately been under Mr. Paget's care.

In the first case, a boy, aged 11 years, met with an accident which caused a compound, slightly depressed, and starred fracture of his left parietal bone. He was stunned for some hours, then vomited, and the next day sat up in bed and answered questions. He had, then, no symptoms of compression, and for that reason he was not trephined. He went on well for twelve days, but, on the thirteenth, he was found to be flushed, and to have a rapid pulse, quick breathing, and a temperature of 103.2; two days later, he was found to have signs of double pneumonia, after which he gradually sank, and died two months after the accident. At the post-mortem examination both pleuræ were found filled with purulent fluid. The dura matter corresponding to the depressed portion of the bone was inflamed and adherent to the bone; there was no inflammation of the arachnoid, but, in the substance of the hemisphere immediately beneath the depressed fragment of bone, was a small abscess or slough of brain-substance, about as large as a sixpence in area.

. In alluding to this case, Mr. Paget remarked that compound fractures of the skull in young persons are usually recovered from without interference when there are no signs of compression, but considered it possible that in this patient, trephining, although contrary to his usual practice in such cases, might have been beneficial. Mr. Paget thought, however, that it was very doubtful whether the elevation of the depressed fragment would have put the lad in any better position with regard to pyæmia than leaving it alone. In referring to the treatment of the secondary inflammation in cases like this, Mr. Paget said that he was not aware of any rule which could be laid down on the subject; secondary trephining in the present case would clearly have been absurd.

On the question of trephining for injuries of the head, Mr. Paget said he did not consider that large enough statistics of successes and failures had yet been collected to admit of our forming rules which shall be constantly applicable. Mr. Paget gave the following provisional laws as, in his opinion, expressing the results of our present knowledge.

1. *Simple Fractures of the Skull.*—*a.* When there are no signs of compression, and no depression, leave the patient alone. *b.* Without depression, but with signs of compression (*i.e.*, abiding insensibility), we may interfere if we can diagnose the seat of fracture. *c.* When there is depression, but no sign of compression, it is best to do nothing if the patient be young; if old, however, there is some doubt about the propriety of non-interference. *d.* When there is depression and compression, we must operate.

2. *Compound Fractures.*—*a* When there is no depression, and no sign of compression, as a rule—especially in young patients—do nothing. *b.* When there is no depression, but there are signs of compression, it is right to interfere. *c.* With depression, but no signs of compression, it is best not to interfere when the patient is young; but probably it is right to operate on an old person. *d.* With depression and abiding insensibility, operate.

The second patient to whom Mr. Paget referred was a man who was admitted for compound fracture of the lower jaw and of the nasal bones, lacerations, and contusions. He was supposed, from appearance after the accident, to be drunk. The next day he was quite sensible, but restless; on the fourth or fifth day he became partly comatose; his breathing was very quick, and his face became much swollen and erysipelatous. Mr. Paget diagnosed some secondary erysipelatous inflammation in the cranium. The man continued to get worse, and died. At the post-mortem examination, a fracture was found extending through the nasal bones, superior and inferior maxillæ, ethmoid, sphenoid and basilar process of the occipital bone, into the foramen magnum. Purolymph in abundance lined the dura mater, and pus was found in the meshes of the pia mater, especially along the lines of the larger arteries. Mr. Paget called attention to the disproportion between the immediate symptoms in this case and the extent of the injury, and remarked that fractures of the base are frequently unattended by signs of compression. Mr. Paget also noticed, in this connection, that fractures of the anterior part of the skull are far less fatal than those of the posterior part.

Mr. Paget alluded, in connection with these two cases, to the nature of the secondary inflammation, and insisted on the importance of drawing a broad line in practice, between an inflammation which results directly from an injury and one which follows it at an interval of several days; the former being sthenic, the latter asthenic and allied to the erysipelatous inflammations.

This led to the subject of erysipelas. Mr. Paget referred to a case now under his care, which illustrated the tendency of erysipelas to shift about from one part or organ to another. The disease, Mr. Paget remarked, is well known to shift from one part of the surface to another, and from the surface to a deeper organ, but it very rarely shifts from a deep structure to one more superficial. Mr. Paget mentioned the following case as an illustration of this rare condition. The patient (a little girl) was admitted on account of a severe burn. She became affected with delirium, fever, and restlessness, and these symptoms led Mr. Paget to diagnose an inflammation of the brain membranes. When she had been in this state for three days, however, erysipelas appeared on the scalp, and, simultaneously, the delirium was relieved, showing, in Mr. Paget's opinion, a translation of the erysipelatous inflammation from her brain membranes to her scalp.

In connection with the recent occurrence of some cases of erysipelas in his wards, Mr. Paget made some remarks on the extreme importance of cleanliness in the treatment of this disease, especially with the view of preventing infection. Mr. Paget said that, although several cases of erysipelas had been in the neighbourhood of patients on whom operations had lately been performed, and had even originated in the wards, yet no single case of propagation of the disease had occurred; and, that he believed this result to be mainly due to scrupulous care in keeping everything about the patients and in the wards very clean, dry, and well ventilated.—Brit. Med. Journ., Feb. 5, 1870.

HOSPITAL NOTES AND GLEANINGS.

Absorption of Pleuritic Effusion by Abstinence from Fluids.—Dr. Glauert has recently published in the Berliner Klinische Wochenschrift an interesting case observed in Professor Von Niemeyer's Clinic at Tubingen, in which rapid absorption of pleuritic effusion was obtained by depriving the patient of water and fluid nutriment. He observes that the ordinary treatment of pleuritic effusion, which remains stationary after the subsidence of febrile action, is not satisfactory, and that it is desirable to abstain from thoracentesis except in those cases where other means have failed. Diuretics or purgatives are of little use in the affection; but Niemeyer has repeatedly shown in his Clinic the great utility of energetic diaphoresis in the various forms of dropsy. That by its agency a larger quantity of water can be abstracted from the body than gains admission to it has been repeatedly shown by careful weighings; and in all probability hot baths, followed by woollen coverings, as recommended by Ziemssen in other forms of dropsy, would prove useful in pleuritic effusion. But there is another mode by which the necessary inspissation of the blood and consequent energetic absorption of fluid may be obtained, and that consists in limitation of the amount of liquid taken. Experience proves that, in persons exposed to absolute hunger and thirst, the excretion of water by the kidneys, as well as the insensible perspiration, although diminished, do not cease; and that a very considerable diminution of fluid may be borne without danger is shown by its irrational employment in the treatment of various diseases in the bread of Scroth cure.

The case now under consideration occurred in the person of a robust man, aged 42, who took cold November 5, 1869, and came to the Clinic on the 20th, the subject of pleuritic effusion on the right side reaching to the third intercostal space, the febrile action having subsided. Being very anxious to get well speedily, he readily consented to abstain from all fluid nourishment, and to live on bread and slightly salted sausage. On the first and second days, however, he complained sadly of this diet, and was, on account of the dryness of his mouth, able to eat hardly any of the bread or sausage. He asked for a slice of apple now and then, and licked the ironwork of the window. During the first twenty-four hours of the treatment the entire amount of urine was 550 cubic centimetres, containing 4.4 per cent. of urea. Next day this had diminished to 450 cubic centimetres, with 6 per cent. of urea, and the patient found that the oppression of breathing had ceased, and that he could ascend stairs much easier. Half a pint of wine and a cup of coffee were allowed. On the 23d the urine had diminished to 420 cubic centimetres, with 6 8 per cent. of urea, and the effusion had sunk to below the nipple. During the next three days (24th—26th) he took only half a pint of wine daily, the urine averaging 417 cubic centimetres, with 6 6 per cent of urea. By the 27th there remained only a little dulness just above the liver, and the patient could run up stairs rapidly with ease. Next day he was dismissed cured, having an excellent appetite.

This is a remarkable example of the rapid removal of recent effusion, but in another case, in which the effusion had existed for months, and which was similarly treated, the effect was only temporary. In this case a daily diminution of weight by a pound or two occurred, together with a spare secretion of urine, and the effusion and all the symptoms diminished; but in a few days afterwards the former weight was recovered, and the effusion again increased. —Med. Times and Gaz., March 26, 1870.

Strangulated Hernia.—Six cases of this were under the care of Mr. Maunder in the London Hospital, at one time in February last, five having been submitted to operation, and one had been reduced by taxis under chloroform. With regard to chloroform as an aid to taxis, Mr. Maunder has observed that just when the breathing becomes stertorous, reduction is effected. Such was the case in the instance of W. B, aged 53, the subject of strangulated inguinal hernia. The anæsthetic had been previously administered, but its influence had not been fully exercised, and taxis had failed.

The danger of administering opium during strangulation was well illustrated in a female, E. M., 66 years of age, with strangulated femoral rupture. Symptoms had existed some twenty hours, and the stomach could not retain food. At this period half a grain of morphia was injected subcutaneously. All pain in the abdomen and tumour subsided, and the irritability of the stomach was so far allayed, that the patient was able to take and to retain half a basin of beef-tea, although strangulation persisted and required operation. As a rule, opium should only be given in the very early stage of strangulation, and upon the understanding that if reduction be not effected within four hours of its administration, herniotomy is to be performed. When strangulation is relieved, opium is most valuable, in order to keep the bowel at rest, that it may have time to recover from the effects of constriction.--Med. Times and Gaz., March 19th, 1870.

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Sympathetic Ophthalmia; Division of Ciliary Nerves; Temporary Relief; Subsequent Extirpation.—T. B., a boiler-maker, aged 27 years, received an injury of the left eye, on January 20th, 1869. He was hammering a rivet, and a piece "flew up into, and cut, his eye, and rebounded." He thinks that no part of the piece of iron remained in the eye.

When seen, on April 8th, 1869, the left eye was intensely inflamed and painful. The pupil was distorted and displaced downwards, and a cataract was visible through it. The wound was evidently at the lower and inner part of the corneo-sclerotic junction, and the iris was drawn downwards into the cicatrix. The tension was very much below the normal standard. The eyeball was markedly tender at the upper ciliary region. There was a slight perception of moving objects held below the eye. Ever since the accident he had suffered from pain, and photophobia, and had consequently been unable to work; and there was circumorbital pain around the right eye. The photophobia affected the right eye as well as, or perhaps more than, the left.

April 16th. Some relief had followed the application of an opiate ointment to the left brow and temple, and the administration of a tonic mixture; but there was still sympathetic irritation, and the tenderness in the upper ciliary region remained. The case seemed one to which the operation proposed by Dr. E. Meyer, of division of the ciliary nerves, was well adapted; because the tenderness was distinctly limited to a particular part of the injured globe, and it seemed very possible that the nerves of this tender spot might be the offending filaments, the division of which might cut off the communication between the morbid and healthy eyes. On April 16th, therefore, the sclerotic, choroid, and ciliary nerves were divided immediately behind the insertion of the superior rectus, by the operation of Dr E. Meyer. The operation, which must have been exceedingly painful, was performed without giving chloroform; the patient, however, scarcely flinching, and making scarcely any signs of suffering.

The relief following this operation lasted till May 7th, or later; all pain and photophobia having ceased within a few days after the division of the nerves. The eyeball, however, remained injected, and soon became much more so; and on June 1st it was so painful and inflamed, and the sympathetic irritation had so completely returned, that the patient submitted to extirpation of the injured eye. On removal, no foreign body was found in the eye; but a fleshy mass growing from the sight of the wound, and extending into the vitreous space.

Since this last operation the recovery was uninterrupted, and on September 10th he presented himself with a well-fitted artificial eye, and declared that he could now do his work as well as ever. He had, however, been obliged to learn to use his hammer as a right-handed man, having been before left-handed. This had caused him some delay in returning to full employment, which he would have commenced at an earlier period, but for this circumstance.

REMARKS.—The case gives a good prospect of successful results in some cases of sympathetic ophthalmitis after division of the ciliary nerves. In this case, the patient scarcely allowed his eye to have rest long enough after the operation; but, being anxious to return to his employment, brought on a fresh attack of inflammation and sympathetic irritation. How far this temporary relief may have been due to allowing a drain from the vitreous humour through the sclerotic wound, it is difficult to say; but the fact of the return of the inflammation is quite consistent with the view that the sclerotic may have closed up at this time, and the beneficial drain from the interior of the eye have been so cut off.—Brit. Med. Journ., Oct. 16, 1869.

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Thrombosis of the Middle Cerebral Artery; White Softening of the Brain.—For many years the accidental plugging of an artery by a piece of fibrin detached from the valves of the heart has been recognized as a cause of white softening in that part of the brain which was supplied by that vessel. A similar result, too, is obtained when molecular particles are carried from a diseased aorta into the cerebral capillaries. Thrombosis of an artery, or the formation of a clot at the point of obstruction, is a much rarer cause; but of this kind two cases have recently been met with in the hospital. In each case the vessels at the base of the brain were very atheromatous, and at some parts their calibre was greatly impaired. At the spot where the internal carotid artery divides into the anterior and middle cerebral arteries, a firm clot of fibrin was found plugging up the middle cerebral completely. In each case the vessels were much roughened by atheromatous deposit at this point; and the altered surface would thus the more readily allow of fibrin being whipped from the blood as it flowed along. The left side of the heart and the large vessels were quite healthy: and there can be no doubt that the plug of fibrin was formed at the spot, and not carried from a distant point. But whatever may be the cause of the obstruction, the cutting off of the blood-supply results in atrophy, or white softening of the parts previously supplied.

Case 1.—Eliza D——, aged sixty, was admitted, under the care of Dr. Beale, into Twining ward, on Dec. 16th, 1869. She had always been temperate, and enjoyed excellent health. Towards the end of November, 1869, she suddenly lost the use of her right arm and leg; but in a fortnight she was quite well again. Three weeks before admission she had complete loss of power in the left leg and arm, and partially of the left side of the face; the pupils were natural, the eyes did not deviate, and there was no arcus senilis. At first she was conscious, and could give an account of her attack; but gradually she passed into a comatose state, and remained so several days before she died. The paralyzed side became very rigid, and was so the whole time she was in the ward. This rigidity came on soon after the attack. The urine was passed unconsciously, and contained towards the end a trace of albumen. Death occurred a month after admission into the hospital.

A post-mortem examination was made about thirty hours after death. On opening the skull, the dura mater was found healthy; the large vessels at the base of the brain were very atheromatous, and their calibre thus somewhat impaired. The middle cerebral artery on the right side was blocked completely by a plug of fibrin, which was firmly adherent to the wall of the vessel; at this spot the vessel was very atheromatous, and the fibrin seems to have been deposited upon the roughened inner coat of the vessel. Beyond this obstruction the smaller branches were full of dark fluid blood, as the collateral circulation was established. The right hemisphere was in a state of white softening, and broke down under a gentle stream of water; there was no hemorrhage anywhere. The left side of the brain appeared healthy, and no trace could be found of any former lesion. The heart was healthy, and neither the valves nor the large vessels had undergone any morbid change. The blood was everywhere fluid, and all the organs much congested.

The cause of the congestion of the tissues seemed to be that, in consequence of the brain lesion, the due supply of nerve-force to the smaller arteries was interfered with; thus stagnation in the capillaries resulted. The blood was properly aerated in its passage through the lungs, and so venous blood was found in the arteries, and was the cause of the full pulse which was noticed during life. To the same cause may be ascribed the torpor of the bowels. No motions were passed after her admission, although various purgatives and enemata were administered. After death a considerable quantity of hard scybala was found in the intestines.

Case 2.—Sarah E. K——, aged fifty, was admitted under Dr. Johnson, in Twining ward, on December 10th, 1869. She was a temperate woman, and had had no serious illness at any time. On December 7th she fell down insensible, and it was noticed that she had lost the use of her right arm and leg; the face did not seem paralyzed, nor did the eyes deviate; the pupils were natural and acted equally to light. While in the ward she was in a semi-comatose state, and not to be roused without difficulty. Her right side was quite rigid, but less so a short time before death. She passed her motions and urine involuntarily; there was no albumen. She died nine days after the attack.

At the post-mortem examination, which was made twenty-four hours after death, the vessels at the base of the brain were found very atheromatous, more especially the basilar and carotid arteries. On the left side of the brain white softening had taken place for a space of two inches in circumference, on the outer side of the corpus striatum and optic thalamus; the brain-substance was quite diffluent here, but in the rest of the organ was healthy. The left middle cerebral artery was completely plugged by a firm plug of fibrin, which had coagulated on the roughened surface of the artery, for the vessel was atheromatous at this spot. The heart and aorta were healthy, and it was clear that in this case, as in the preceding one, the obstruction was due to thrombosis, and not to embolism.—Lancet, March 19, 1870.

MEDICAL NEWS.

DOMESTIC INTELLIGENCE.

Treatment of Intermittent Fever complicated with Rheumatism. By B. E. Dodson, M.D., Alden, Iowa.—Nothing is more common in marshy districts than to find intermittents complicated with rheumatism, and *vice versa*, and to their successful treatment a true diagnosis is very essential. During 1864 and 1865, in the fortifications about Washington, this complication was of every day occurrence, and those surgeons that relied on "quinia, Fowler's solution, mass. hydr. &c.," generally lost their patients, and wondered that quinia would not cure the ague.

Since 1850, I have treated all kinds of rheumatism with iodide of potassium and ipecac, paying no attention to whether the case is recent, or of long standing, inflammatory or chronic, of "the blood" or "of the nerves," &c., and I have never found a case correctly diagnosed that did not yield satisfactorily.

I give from one-half ʒ to ʒ doses every four hours, alternated with from 3 to 5 grs. ipecac (the patient kept warm and in bed) for a full grown man—smaller men, women, and children, according to size and physical development—continued from five to ten days always cures. I have given as high as ℥j of the potassium in twenty-four hours to large men, of full habit, in acute attacks. The only unpleasant result is a little difficulty in swallowing for a time, which soon subsides on stopping the medicine.

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University of Pennsylvania, Medical Department.—Dr. D. Hayes Agnew has been appointed Professor of Clinical and Demonstrative Surgery, and H. Lenox Hodge, M. D., Demonstrator of Anatomy, in this school. Both appointments are regarded as excellent.

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List of Medical Graduates in 1870 (continued from p. 56, April No.)

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Albany (N. Y.) Medical College .	23
Medical Dept. University of Louisville	92
Indiana Medical College . .	20
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St. Louis Medical College . .	43
Missouri Medical College . .	29
St. Louis College of Physicians and Surgeons	2
New Orleans School of Medicine, .	27
Med. Dept. of Willamette University	7

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Medical College of the State of South Carolina.—Several changes have been made in Faculty of this School. Prof. E. Geddings has resigned the chair of the Institutes and Practice of Medicine, and has been elected Emeritus Professor of that branch, and also Professor of Clinical Medicine—a chair recently created. We are glad that the institution will thus retain the services of our old and esteemed friend, Dr. Geddings, who is one of the most erudite, experienced, and skilful practitioners in our country. Other changes have been made in the school.

The Faculty, as at present constituted, is as follows:—

E. Holbrook, M. D., Emeritus Professor of Anatomy.

E. Geddings, M. D., Emeritus Professor of the Institutes and Practice of Medicine, and Professor of Clinical Medicine.

R. A. Kinloch, M. D., Professor of Surgery.

F. M. Robertson, M. D., Professor of Obstetrics and Diseases of Women and Children.

J. P. Chazal, M.D., Professor of General Pathology, Pathological Anatomy and Hygiene.

Middleton Michel, M. D., Professor of Physiology.

Geo. E. Trescot, M. D, Professor of Materia Medica and Therapeutics.

C. U. Shepard, Jr., M. D., Professor of Chemistry.

J. F. M. Geddings, M. D., Professor of the Institutes and Practice of Medicine.

F. L. Parker, M. D., Professor of Anatomy.

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Albany Medical College.—Dr. Thomas C. Durant, of New York, a graduate of the college, and an early student of Drs. March and Armsby, has given $15,000 to endow the "March Professorship."

Drs. E. R. Peaslee and Meredith Clymer, of New York, and Dr. Wm. P. Seymour, of Troy, have accepted chairs in the faculty of this college.

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Ophthalmological Society of Philadelphia.—A society has recently been organized in Philadelphia under the above title, and the following gentlemen were chosen officers for the ensuing year:—

President, Dr. Isaac Hays.

Vice-President, Dr. E. Hartshorne and Dr. T. G. Morton.

Treasurer, Dr. W. Hunt.

Secretary, Dr. W. F. Norris.

FOREIGN INTELLIGENCE.

Deaths from Chloroform. — A young woman went to Dr. Millar's Surgery at Accrington, on March 19, 1870, to have some teeth extracted. Chloroform was administered and after pulling out the third tooth, Dr. M., observed that the patient was dying, and life was soon extinct. She had had chloroform a week before, but it did not take effect.—Brit. Med. Journ. April 2, 1870.

A married lady, æt. 36, called at the office of Mr. Rice, in Great Barrington, Mass., Feb. 12, 1870, to have twelve teeth extracted, and wished to take chloroform, though both Mr. R., and her husband tried to dissuade her. Dr. W. H. Parks gave the chloroform by pouring a small quantity upon a napkin, and held a little distance from the face, so as not to interrupt a sufficient supply of atmospheric air. She passed under its influence quite easily, and did not take as much chloroform to produce insensibility as in many cases. She was made partially insensible by the extraction of the first four teeth; a little more chloroform was given, and so on, until all were extracted. Nothing unusual occurred until after the operation. While in the act of retching or vomiting, she seemed to strangle, and suddenly expired. Dr. Parks was supporting her head at the time, with his finger pressing upon the temporal artery, and the first intimation of danger was the sudden cessation of pulsation, and in a moment she ceased to breathe. She was immediately placed in a horizontal position, and artificial respiration kept up for three-quarters of an hour, after which time, seeing the hopelessness of the case, further efforts at resuscitation were abandoned.—Dental Cosmos, April, 1870.

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Cubebs in Diphtheria.—In a recent number of the Gazette des Hôpitaux M. Vaslin gives some account of the treatment of diphtheria by means of cubebs, introduced some time since by M. Trideau, and especially employed by M. Bergeron, of the St. Eugénie Hospital. This gentleman has already communicated several cases to the Société des Hôpitaux, telling in favour of this agent; and in the present paper M. Vaslin, his interne, gives the results as observed in the St. Eugénie during 1869. During this year 42 cases of diphtheria (cases of croup and diphtheria seem to be confounded together by the French Practitioners), 8 being examples of angina and 34 of croup. Of the 8 anginas, 7 recovered, the other dying of consecutive diphtheritic paralysis. The pharyngeal diphtheritis was primary in almost all these cases, the false membranes existing chiefly on the tonsils. The general symptoms were limited to mild febrile reaction, except in two cases, when temporary sub-delirium was present. The sole medicine employed was a saccharate of cubebs, twenty grammes being administered during the day in divided doses, no local treatment being resorted to. The false membranes were gradually dissolved, the duration of the disease not exceeding ten days.—Med. Times and Gaz., March 19th, 1870.

Tetanus—Administration of Chloral—Recovery.—M. Wurtz read to the Imperial Academy of Sciences recently a note from M Verneuil, in which he relates a case of tetanus cured by the administration of chloral. M. Nelaton very justly remarked that too much importance ought not to be attached to a single case of tetanus cured after the employment of a new medicine. A multitude of medicines have succeeded once or twice in apparently curing tetanus but invariably failed subsequently, proving that the cures were not the effect of the medicine.

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Ligature of Internal Iliac Artery.—The operation of tying the internal iliac artery has been successfully performed by Professor Gallozzi. It was rendered necessary owing to a diffused traumatic aneurism resulting from a stab of a poignard in the superior and interior margin of the right gluteal region—the patient, a young man, aged 22. Recovery was satisfactory, but was much retarded by the occurrence of an immense abscess occasioned by the unabsorbed débris of the aneurismal sac.—Med. Times and Gaz., April 9, 1870.

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Subperiosteal Excision of Elbow-Joint; Reproduction of the Bones Complete.—The correspondent of the Med. Times and Gaz. (see No for March 19, 1870), during a recent visit to the wards of M. Ollier, at the Hotel Dieu, Lyons, found a most interesting and instructive set of cases, all kinds of bone diseases being amply represented. With regard to the subperiosteal excisions, for which this surgeon is so justly renowned, we were shown one of the elbow-joint in a man of 47 years of age, a very bad subject for such an operation, on account of his age and general unhealthy condition, and yet we were able to observe that the reproduction of the bones was very complete, and that active extension did exist to a slight extent, though the operation had only been performed about three months before. In another case of the same operation, practised on a young girl, the reproduction was astonishingly perfect, and had it not been for the cicatrix the most practised eye could hardly have detected, on seeing the elbows placed in extreme flexion, any difference between the contours of the two limbs. All the movements were also quite perfect, the only fault noticeable being that the arm could not be extended absolutely straight, as th new olecranon seemed to meet with some opposition; this, however, would doubtless be remedied by time and the continued use of the limb. We were fortunate enough to witness the dissection of a reproduced elbow-joint, the first that Mr. Ollier has had the opportunity of examining, because, as he significantly said to us, "all my other cases are alive." It was that of a young man who had died of phthisis fifteen months after the operation of excision. We can only say that we could have wished that all who are sceptical as to the real reproduction of bones in their original forms and positions after these subperiosteal operations might have been there to have seen for themselves.

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Modification of Operation for Disarticulation of Shoulder-joint.—M. Verneuil has introduced an excellent modification of Larrey's procede en raquette for the disarticulation at the shoulder-joint, by means of which hemorrhage is completely guarded against, and which permits, if necessary, to operate without any assistance—a great desideratum to the military surgeon.

The two cases in which I have seen M. Verneuil execute his operation were both for accidents, and where, on account of the anæmic condition of the patients, it was of the greatest importance to avoid any further loss of blood.

In Larrey's process the patient is made to sit up in bed—already a great inconvenience because of the danger of syncope in case chloroform has been administered—and an aid is required to compress the artery in the interior flap the moment the surgeon is about to finish its section. That this latter part of the operation is by no means an easy one must be acknowledged by all surgeons, especially military surgeons, who are sometimes necessitated to call in the aid of persons unacquainted with the duty assigned to them. But even with tolerably intelligent aids it may happen that the axillary artery is not properly grasped, and a serious hemorrhage is the consequence. I know of an instance which happened in the trenches before Sebastopol, where a French surgeon, about to perform this operation by candle-light, was left in the dark because the aid failed to grasp the artery as he was finishing the anterior flap, and the jet of blood put out the candle. It is unnecessary, I suppose, to say what became of the patient in this case.

M. Verneuil's operation is as follows:—The patient placed upon his back near the edge of the bed, the point of the knife—very much like in Larrey's process—is introduced a little below and inside the acromion,[1] and carried in a vertical direction downwards a distance of 2½ inches, cutting through the deltoid to the bone. An anterior flap is now traced with the blade of the bistoury, beginning a little below the superior extremity of the first incision, and following in an oblique direction down and inwards until arrived at the inferior limit of the axilla on the arm. The posterior flap is traced in a similar manner upon the posterior aspect of the shoulder, or may also be made by continuing the incision for the anterior flap out and upwards to the first starting point. Thus far nothing more than the skin has been incised. The muscles in the anterior flap are then divided by successively cutting through the deltoid, the pectoralis major, beneath which lies the long tendon of the biceps, and the coraco-brachialis. This brings to view the vasculo-nervous fasciculus of the axillary vessels and nerves. After dissecting the flap upwards, a needle of Deschamps is passed beneath the axillary artery and vein above the point of origin of the anterior circumflex and inferior scapular arteries. The completion of the anterior and the section of the posterior flap, together with the disarticulation, can now be effected with ease and without assistance. I need not tell you that a bringing together of the flaps is not even thought of. I have had occasion to observe in former letters that our Paris surgeons never attempt union by first intention. The wound is stuffed with lint dipped into alcohol.

The ligature of the vein is a good practice. The proximity to the brachio-cephalic trunk, and the possibility of an insufficiency of the valves in these vessels exposed to the danger of the introduction of air. M. Verneuil is also in the habit of resecting the nerves of the brachial plexus as high up in the axilla as possible. In his first operation, neglecting to take this precaution, peripheral neuromata developed themselves in the stump, forming little, hard, and very painful tumours which had to be removed some time later. I may mention en passant that, out of seven disarticulations at the shoulder, performed by M. Verneuil in the Lariboisiere Hospital for injury, all have been successful. With the same operation for pathological causes, the results have been altogether different. The modifications and advantages of this over Larrey's process consist in (1) the position of the patient; (2) hemorrhage impossible; (3) no aid required; (4) ligature of the vein; (5) resection of the nerves.—Med. Times and Gaz., April 9, 1870.

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Treatment of Diseases of the Knee-Joint. By Thomas Bryant, Assist. Surg. Guy's Hospital.—In the treatment of all cases of diseases of the knee-joint, or, indeed, of any joint, there is one question which naturally arises in the surgeon's mind, and that is as to the competency of natural processes to effect a cure. Should this question be answered in the negative, either by the judgment of the surgeon or the progress of the case, another equally important question has to be decided which has direct reference to excision of the joint or amputation of the limb, for I must assume for the present that neither of these operations would be entertained until either the circumstances of the case had fairly demonstrated that nature was incompetent to conduct it to a successful issue, even though guided skilfully by art, or that some operation was demanded to save life.

All other measures than those named—excision and amputation, must be looked upon as subsidiary to the one great object of securing a natural cure; the use of splints, division of tendons, and incision into joints tending towards this desirable end, and being of value only so far as they conduce to that one great object.

In examples of chronic or subacute synovitis no operation is needed. Such cases, as a rule, do well under surgical treatment. Rest of the limb in a horizontal posture, counter-irritation by means of blisters, and the iodide of potassium internally are generally amply sufficient to effect a cure; while pressure by well-applied strapping, after all signs of inflammation have gone and the products of inflammation alone remain, is of great value.

In traumatic cases ice applied locally is of inestimable use, and that, with complete immobility of the affected limb, is, in the majority of cases, all that is required. When the pain is severe, an opiate should be given; or, which is better, a subcutaneous injection of a quarter or half a grain of morphia should be used.

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[1] In practising this incision inside to the acromion between it and the coracoid process, the joint is less covered by the acromial vault, and the capsular ligament more easily opened.

In acute suppurative synovitis of a joint following a wound, a free incision into the joint is probably the best practice. The remedy, it is true, is a severe one when applied to the knee, but it is applied to relieve a condition which is fraught with peril. It has been attended with good success, and may be practised.

Under other and more severe circumstances, immediate amputation may be called for, as in the following case:—

Case 43.—Severe Laceration of Thigh into Knee-Joint—Amputation six hours after the Accident—Pus in Joint—Highly Injected Synovial Membrane.

David B., aged 6, was admitted into Guy's under my care on July 5, 1862, with a severe laceration of his left thigh and knee-joint from the passage of a wheel of a loaded omnibus over the part. Nothing but amputation could be entertained, and, six hours after the accident, the operation was performed. A good recovery followed.

On examining the knee-joint directly afterwards, the synovial membrane was seen to be intensely injected all over, down to the margins of the articular cartilages. Pus was also found in the joint, about half an ounce. This was examined microscopically. The rapid injection of the synovial membrane and formation of pus is of great interest.

Mr. Maunder, within the last year or so, has reintroduced a practice which had been formerly employed with some effect—that of ligaturing the femoral artery in cases of suppurative synovitis, whether the result of a wound or of some other cause. The case for which he suggested the practice made a good recovery. The acuteness of the local symptoms soon subsided after the operation, and all pain ceased. Suppuration likewise rapidly disappeared, and recovery took place, although with a stiff joint. This result was eminently satisfactory, and it is hardly fair not to attribute it in a measure to the treatment which was employed. Such a practice, however, should be only thought of when acute suppuration is threatening, and consequently the integrity of the joint is endangered. It might be practised before the necessity of opening the joint has appeared, and under such circumstances it seems capable of preventing it; for the sudden cutting off of the supply of blood to an inflamed part may fairly be expected to check inflammatory action, and to starve the disease, in the same way as it has been proved to do in elephas.

In acute synovitis the result of an abscess or a sequestrum making its way from the bone into the joint, or from the discharge of an abscess the product of a suppurating synovial pulpy disease, other treatment will be required; for such a complication is clearly, under these circumstances, only a result of another disease, and is not the disease itself—it is an effect and not a cause. The original cause of the synovitis must be treated if success is to follow any practice. This part will, however, receive attention as we progress.

In the pulpy synovial disease of the knee-joint uncomplicated with suppuration, the limb must be immovably fixed on a splint from the very first; fomentations should likewise be employed and tonics given. Blisters in this affection are not apparently of much use; moxas and setons are painful applications, and have no definite value. I never use them.

When the pulpy membrane breaks down and suppuration appears, the abscess being outside the joint, it should always be opened; when it has discharged itself into the joint and suppuration of the joint follows, a free incision into the articulation is doubtless the best practice.

When this treatment has failed or seems inapplicable, the question of amputation or excision will have to be entertained—that is, when it is clear a recovery with a movable or even a stiff joint is beyond hope, and when the general powers of the patient are clearly yielding to the severity of the local disease.—Med. Times and Gazette, April 2, 1870.

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Holt's Operation for Stricture.—Mr. Holmes exhibited to the Pathological Society (London), a urethra, in which Holt's operation for stricture had been performed. He said there was a difference of opinion as to what it is that gives way—the mucous membrane or the submucous tissue. The patient, a man nearly 60, had long had stricture, and had been subjected to a great variety of treatment. He had been operated on by Holt's method in 1861. When seen he had retention, and a catheter was passed, but had to be removed, as it gave rise to intense irritation. The stricture was ruptured. He had rigors the same night. No. 10 catheter was passed a day or two after, but rigors still continued. Two small swellings appeared at the site of the two strictures, but they contained no pus. Gradually he became worse, vomiting ensued, and pyæmia with secondary deposits followed. After death it was found that at both strictures the mucous membrane was lacerated, most so at the posterior one. Such lacerations imply the risk of infiltration.

Mr. **Nunn** was convinced that Holt's operation was too much used. He thought the effect of syphilis on stricture was too much overlooked. It tends to made them recalcitrant.

The **President** asked if the second operation afforded a fair test.

Mr. **Holmes** said the former operation was so long antecedent that all its effects must have passed away. Once before he had done the operation a second time.

Mr. **Sidney Jones** thought the case hardly constituted a fair test.

Mr. **Hulke** said the question whether the mucous membrane suffers or not depends on the closeness of its connections with the subjacent tissue. That it was often ruptured was proved by the bleeding.

Mr. J. D. **Hill** had one patient who died of pyæmia.—Med. Times and Gaz., March 26th, 1870.

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Cutaneous Absorption.—M. **Bremond**, of Vincennes, in a lecture delivered at a late séance of the Academy of Medicine, states that he believes he has irrefragably proved the occurrence of absorption by the skin of a medicinal substance, even when this is not volatile, as in the case of iodide of potassium. In a first series of experiments he exposed the skin to the action of a vapour bath charged with the salt, gradually raised to a temperature of 113° F., for half an hour. Two hours afterwards iodide of potassium was observed in the urine, though it could only have entered by the skin. In a second series of experiments he found that no absorption ordinarily occurs unless the temperature of the vapour bath exceed the normal heat of the body by at least one or two degrees, and the exposure have lasted for at least half a minute. Whilst in a third series he states, as the result he has obtained, that even at 95° F. absorption may occur, provided the body have previously been exposed to the action of a vapour bath, and afterwards vigorously soaped and rubbed, by which means all the oily material is removed. These experiments explain the different results that have been obtained by various observers.—Lancet, April 2, 1870.

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Methylic Ether as a General Anæsthetic.—Dr. **Richardson** made a communication at the last meeting of the Medical Society—Mr. Gay, the newly-elected President, in the chair—on methylic ether as a rapidly acting general anæsthetic. The methylic ether is a gas, but it is absorbed in very large quantities by absolute ethylic ether, and in the fluid the methylic ether is held with fair stability. The ether is inhaled from a simple mouth-piece, and anæsthesia, sufficiently deep for a small operation, is induced, in some cases, within the minute. Neither symptoms of asphyxia nor of faintness have yet been observed; and one peculiar part of the phenomena of the anæsthesia is, that the operation, as of tooth-extraction, may be conducted painlessly, while the patient is capable of carrying out what seem to be perfectly conscious acts. During the past week several painless extractions of teeth have been performed under the influence of the ether, recovery from its effects being almost immediate, and unattended by vomiting or other disagreeable symptoms.—Brit. Med. Journ., March 19th, 1870.

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Possible duration of Pregnancy.—In the course of an action for damages for the seduction of a young woman, the question of the possibly protracted duration of gestation was raised. The alleged father had had no access to the mother of the child later than 301 days before its birth, and he naturally disputed his liability. Dr. Tanner deposed that the ordinary period was 270 to 280 days, but might be exceeded by two, three, or even four weeks. He thought there was no inconsistency in the present case (from April 15th to February 9th—that is, 301 days). He had not known any case himself in which the ordinary period had been exceeded by a week, but he had no doubt there were such cases. He had heard of such. Mr. James F. Clarke deposed that there were cases on record extending over more than 301 days. Sir James Simpson had recorded a case of 310 days. Dr. Barnes deposed that the ordinary period was 271 days. He had known cases of 280 and of 285 days. He thonght it very improbable, but did not like to say it was impossible, for gestation to extend over 301 days. It was so improbable that he did not believe it. Dr. Tyler Smith said that the longest period of excess he had known was a fortnight. Dr. Reid—a most accurate observer—had recorded forty-three cases of protraction, the longest of which was 300 days. Dr. Smith considered that case as reliable as any doubtful case could be. The verdict was for the plaintiff—damages, £200.—Brit. Med. Journ., March 5, 1870.

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Things not Generally Known.— The Pharmaceutical Journal publishes a remarkable instance of unforeseen danger arising from the facility with which oxide of silver is reduced by contact with vegetable extracts in common use. A medical man prescribed twenty-four pills, each containing two grains of the oxide of silver, a twenty-fourth of a grain of muriate of morphia, and a sufficiency of extract of gentian; the pills being coated with silver in the usual manner. The pills were delivered to the patient in an ordinary pill-box, but the lady, being in her nursery, and having no pocket in her dress, placed the box in her bosom, probably next the skin. In three-quarters of an hour a severe explosion occurred; her under-clothes were reduced to tinder, and her right breast was seriously burnt. The patient fortunately had presence of mind enough to seize the part with both hands, and thus extinguish the flame. We learn from Mr. Hills that a similar occurrence has been known in compounding the extract of colocynth with the oxide of silver, and that with creasote or oil of cloves this salt is reduced to the metallic state, with the production of heat amounting often to an explosion. In fact, many of the essential oils reduce the oxide of silver, and one of the processes for silvering glass is founded on the fact, oil of cloves being usually employed in the operation. We may mention that when glycerine and permanganate of potash come in contact, h[illegible] is evolved, sometimes resulting in flame. An instance has occurred in which a wound was covered with the glycerine of starch, and then sprinkled with powdered permanganate of potash, when the heat produced became unbearable.—Lancet, March 26th, 1870.

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Kryptophanic Acid—a New Acid Existing in Urine.—Dr. THUDICHUM has lately communicated to the French Academy of Science, and to the Chemical Society of London, an account of a nitrogenous constituent of urine, to which he has given the name Kryptophanic Acid. Next to urea, it forms the most abundant organic constituent of urine. Its salts are in general soluble in water and insoluble in alcohol, and advantage of the latter fact is taken in the process followed for the extraction of the acid. The formula of the free acid is $C^{10} H^{18} N^{2} O^{10}$. There are several sets of salts, some containing four equivalents of base, some containing three equivalents, and some with only two equivalents. The mercury salt is insoluble in water, and is thrown down along with the mercurial compound of urea in the ordinary process for the estimation of urea in urine. It will, therefore, be requisite to apply a slight correction to the results of urea-determinations in order to allow for the presence of kryptophanic acid. The process by which the new acid is obtained is, in outline, as follows. The urine, after having been treated with milk of lime, filtered and concentrated by evaporation, is slightly acidified with acetic acid, and precipitated with alcohol. The crude kryptophanate of lime is purified, and converted into lead-salt, which is decomposed with sulphuric acid.—Brit. Med. Journ., April 9, 1870.

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A New Test for Albumen.—Dr. C. MEYMOTT TIDY, Joint-Lecturer on Chemistry at the London Hospital, has noted that a mixture of equal volumes of acetic and carbolic acids is a far more delicate test for the presence of albumen than any other method that has been proposed. In using this test with urine, it is necessary to shake the test-tube, as some opacity is produced by the mere admixture of fluid, which, however, disappears on agitation.—Brit. Med. Journ., April 9, 1870.

CHAMBERS ON INDIGESTIONS—Enlarged Edition, Just Ready.

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The work should be in the hands of every practising physician.—*Boston Med. and Surg. Journ.*, Nov. 21, 1867.

Apart entirely from the merits of this work, which have been so highly appreciated by the profession that a large edition has been exhausted in an unprecedentedly short time, the book is one of the most readable in medical literature; such a one, in fact, as a wearied practitioner, anxious to gain information, but too tired to take to heavy work, would be delighted to pick up in a spare half hour.—*London Med. Times and Gazette*, Nov. 23, 1867.

It is nearly as exhaustive as any work on such a complex subject can be.—*London Lancet*, March 16, 1867.

Such a work as this affords pleasure, because it is a transcript of what actually occurs, and not the result of work carried out in the study. We can refer to it as a source whence much valuable information can be obtained, and would recommend it to the profession as a hand-book, to which they can apply when wearied with the monotony of their own thoughts or fatigued with their daily labor.—*St. Louis Med. Reporter*, Oct. 1, 1867.

The style of the author is so racy, his expression so clear and vivid, and his knowledge and skill so manifest, that the reader becomes interested in spite of himself. In the absence of opportunities for listening to clinical instruction, the young practitioner especially will find this little book of inestimable value.—*Leavenworth Med. Herald*, Aug. 1867.

On such topics as the effects of various articles of food and kinds of diet, and of various social habits in producing the various forms of indigestions and the best means to remove them, and on the various forms and causes of abdominal pain, of vomiting, diarrhœa, and constipation, the reader will find most interesting and instructive details.—*British Med. Journal*, Nov. 2, 1867.

In our opinion it is the book of the medical season.—*Medical Mirror*, London, Aug. 1, 1867.

BASHAM ON RENAL DISEASES—In a few days.

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A very useful and handy text-book designed to introduce students to the clinical aspects of these maladies, this volume may be recommended as supplying, in a convenient form, an account of the important group of renal diseases which is derived from large personal experience on the part of the author, and at the same time incorporates the results of the recent researches of many other observers. It will probably become a text-book in schools, and a handy-book for busy practitioners.—*The Practitioner*, April, '70.

HENRY C. LEA, Philadelphia.

THE MEDICAL NEWS AND LIBRARY.

VOL. XXVIII. JUNE, 1870. No. 330.

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MEDICAL NEWS.

CLINICS.

The Administration of Anæsthetics.—By A. Ernest Sansom, M. D., Physician to the Royal Hospital for Diseases of the Chest, &c. &c.

The public as well as the professional mind seems at the present time to be passing through one of those phases of terrorism which, induced by the news of a death during the administration of chloroform, occur from time to time. It is vain to adduce the argument that, considering the vast number of times in which an anæsthetic is administered with comfort and safety, the danger is, proportionately, exceedingly small. If but one in ten thousand die, it is right that one death awaken all our powers to avert the danger from those who come after.

It is a right time that we should take a retrospective glance, and attain an estimate of the present position of anæsthetic agents and their administration.

In the first place, we are not, as formerly, confined to the use of one agent. To ether succeeded chloroform, to chloroform amylene, tetrachloride of carbon, bichloride of methylene, nitrous oxide, besides many other agents less widely known, and various mixtures and superadditions of one anæsthetic and another. Chloroform, the most widely employed, takes almost all the blame of the disasters. To my mind, we are too much disposed to look upon the production of a state of insensibility, for the performance of a surgical operation, as the administration of an agent rather than the induction of a state or condition. It is not the administration of chloroform, but the induction of anæsthesia, which is required. We have a power of selection now, which was not possessed in times past; a fatal case points less to the failure of an agent than to the imperfection of a system.

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The first rule for guidance is—

A. The choice of an anæsthetic agent should be regulated by the condition of the patient and the requirements of the case.

If it be desired to relieve pain, as in headache or the slighter forms of neuralgia, I know no better agent than tetrachloride of carbon, whatever be the condition of the patient. If an operation of short duration is to be performed, the administration of nitrous oxide is probably the most indicated. This has the properties of quick action, induction of deep insensibility with rapid recovery. The use of this agent requires, however, apparatus and time for arrangement; it cannot be a measure for the many and for the moment. Yet, largely used as it is by dentists, it takes away from the general dangers of anæsthesia, by withdrawing from the greater risks of the other anæsthetics, a large class which was proved to be in aforetime peculiarly prone to danger. Certain conditions should, however, in my opinion, preclude the administration of nitrous oxide; these are pulmonary congestion, cardiac affections, and cerebral affections. When an operation of uncertain or of long duration is to be performed, the chief agents are ether, bichloride of methylene, and chloroform. Our data as to the bichloride of methylene are, I think, as yet insufficient. As we have seen lately, one death has resulted from its use. In a case in which I administered it for a dental operation, signs of syncope occurred, and I was obliged to substitute chloroform. The great question is, Does bichloride of methylene sustain the heart's action during profound anæsthesia with greater power than chloroform? To this question a wide practical experience (which, from *à priori* evidence, the agent greatly deserves) only can reply.

The agents which remain to be considered are ether and chloroform. Concerning the comparative action of these, I think we are justified in concluding that, while the latter is by far the more practicable agent, ether can induce a profound anæsthesia with less depression of the heart's action than chloroform. If complete muscular relaxation be required, as for the reduction of dislocation, etc., it is better to use ether. For the great majority of cases the chief agent remains chloroform. The contra-indications to its use are the existence of prominent signs of fatty degeneration of the heart (valvular disease is no contra-indication), *delirium tremens*, and habitual intemperance. In the first of these conditions it will be a question whether any anæsthetic at all shall be administered. Argument may fairly urge that the shock of an operation will be a danger to the feeble heart. On the other hand, there is the undoubted fact that chloroform can induce cardiac debility. The dictum that "a case for operation is a case for chloroform," can be at once set aside as a finality which would arrest all one's efforts to import greater safety into the practice of anæsthesia. Fortunately we have a method of relieving pain which can, as M. Claude Bernard has shown, go hand in hand with the operation of a volatile anæsthetic—the subcutaneous injection of morphia. Supposing, therefore, a patient having undoubted signs of cardiac degeneration be the necessary subject of an operation, I think no better plan could be counselled than the subcutaneous injection of morphia, followed, if necessary, by the inhalation of ether. In cases where the patient is the subject of habitual intemperance, the subcutaneous injection of morphia also is indicated. With this preparation chloroform may with care be administered instead of ether, which has a longer stage of excitement. Having made choice of an anæsthetic, another rule presents itself to us.

B. Especial care should be taken at the early stages of the administration of an anæsthetic, whatever that anæsthetic may be.

There is no doubt that the emotional disturbances which occur at such a time may induce dangerous and even fatal effects. Sudden death at the moment of commencement of an operation when no anæsthetic whatever has been employed, are far from uncommon. Such instances have occurred in the practice of Stanley, Desault, Civiale, Roux, Chopart, Cazenave, Gargangeot, and others, and have been recorded by many observers. Giraldés goes so far as to say that "the accidents which have been observed do not much surpass in number the cases of sudden death which have occurred without apparent cause during or soon after operations." From collateral evidence, however, we know that this, though a partial, is not a complete explanation of chloroform dangers. It is a significant fact that nearly half of the cases which have proved fatal (50 in 190) succumbed before the full effect of chloroform was induced. This leads to the consideration of a word, which

I confess I do not like, that has been adduced to explain the catastrophes—idiosyncrasy. What does it mean? A condition of system inimical to chloroform *quâ* chloroform? It cannot be so, for we see that emotional syncope may occur without the anæsthetic element. Just as some people faint at slight causes—the scratch of a finger, the sight of blood, or an emotional effort—so some fatally faint at the commencement of an operation. Moreover, some of those who have suddenly died in the early stages of chloroform administration have previously inhaled with impunity. It follows that every effort should be made that the emotional disturbances should be calmed, and that the early stages of an administration should be conducted with care and caution. This eliminates one of the elements of the so-called idiosyncrasy inimical to chloroform. It is a condition of sympathetic susceptibility induced by any external agency. It will not, however, explain those deaths which occur in the more profound stages. We are led to a third rule—

C. In the administration of chloroform due regard should be paid to its well-established physiological properties. This may almost seem a truism. Yet I think that nearly all who have made this subject a special study will agree with me that the toxic action of chloroform is ignored in the common method of administration. No one can from experiment or from observation of the records doubt for a moment that chloroform does possess a toxic action; and just as with all other agents its danger is dependent upon its dose. The most competent authorities agree that too strong atmospheres of chloroform are dangerous. For the purpose of inducing and maintaining anæsthesia a portion of no more than four per cent. of chloroform vapour in atmospheric air is necessary; above six per cent. is dangerous. Strong atmospheres of chloroform administered to the human subject are dangerous in two ways—First, by their tendency, acting on the branches of the *par vagum* distributed to the lung, and thus by reflex action upon the heart, to cause shock or cardiac syncope.[1] This may occur at the early stages of anæsthesia or any period prior to complete loss of consciousness. Secondly, by direct paralysis of the cardiac and vaso-motor nerves. This can occur only in profound anæsthesia, though it also may be rapidly induced. When pure chloroform is sprinkled upon a piece of lint or a napkin, what percentage of the vapour is it possible for a patient to inspire? I have been at some pains to investigate this, and it may cause some surprise to those who have not practically inquired into the point to be assured that it is possible for a patient at a temperature of from 60° to 64° Fahr., when a drachm of chloroform is sprinkled upon lint, to inspire an atmosphere containing more than thirteen per cent. of the vapour.[2]

Of course a happy chance so regulates the matter that a patient does not usually inhale this proportion, and a skilled administrator will take care that he does not; but the possibility of the danger remains. How often in the details of the fatal cases it is recorded in some such fashion as this, "More chloroform was poured upon the lint, the patient inhaled and fell back, etc. etc." Why? because he suddenly inhaled a deadly dose.

Granted that a due dilution of chloroform is a necssary thing, how shall we obtain it? There is a widely spread objection against inhalers; they are not at hand at the moment they are wanted. I think they can be dispensed with if the chloroform employed be diluted with an equal bulk of absolute alcohol. By such a measure as this I have ascertained that, partly by the admixture of the chloroform vapour with the vapour of alcohol, but chiefly by the retarding power which the latter exerts upon the volatilization of the chloroform, the percentage in the resultant atmosphere is reduced just one half. The above considerations eliminate another element of so-called idiosyncrasy. The effect of a sudden inspiration of a strong chloroform atmosphere is just as much toxic as the swallowing of an overdose of prussic acid. But it may now be urged that in some cases wherein you have exercised all care, and while you are administering only a proper dose of chloroform vapour, from some cause (perhaps connected with the operation) the heart may show signs of failing. We are led to what I think may be established as a rule.

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[1] On this point see an exhaustive review of the whole subject of anæsthesia in the *American Journal of the Medical Sciences* for January, 1867, and Brown-Sequard's Lectures on the Physiology and Pathology of the Nervous System, p. 160.

[2] See tables appended to my paper read at the British Medical Association at Oxford, and reprinted from *British Journal of Dental Science* for September, 1868, and "On the Pain of Parturition and Anæsthetics in Obstetric Practice" in *Transactions* of Obstetrical Society of London, vol. x. p. 161.

D. In the course of the induction or during the maintenance of anæathesia one agent may be advantageously substituted for another. Practically, in animals, as well as in man, I have found that if in the course of chloroform administration there has been the least sign of circulatory debility ether substituted for the chloroform renews the power whilst maintaining the anæsthesia.[1] This is confirmed by my friend Mr. Geo. Cowell, in a letter to these columns. In observations upon animals I have found that the substitution of any one anæsthetic for any other stimulates the heart.

Practical Rules.—Selection of cases having been made according to the principles before mentioned, I would suggest the following as rules for guidance:—

1. The administrator intrusted with the induction of anæsthesia should be provided with the following armamentarium: A case of three stoppered bottles, one containing the mixture of chloroform and absolute alcohol, another pure chloroform, a third absolute ether. A soft handkerchief or porous material through the fibres of which, when covering the face, respiration can readily take place. A hypodermic syringe with suitable morphia solution.

2. The patient should have abstained from food as far as possible on the day of inhalation. Nothing whatever should have been taken for hours.

3. The patient being, if possible, in the recumbent position, the administrator should place the handkerchief over the nose and mouth, so as loosely to cover them with a single fold, and note that respiration is unimpeded. The mixture of chloroform and alcohol should then be dropped on the fold, a few minims at first, and, after two or three inspirations, twenty or thirty, which should be renewed as often as evaporation renders necessary. This should be continued until the desired stage of anæsthesia is arrived at.

4. Ether may now be substituted if it is thought desirable, the fold of lint being moistened therewith.

5. In some rare cases it may be necessary (but only after tolerance has been induced by the administration of the dilution) to use some of the pure chloroform.

6. In case of any alarming symptom artificial respiration should immediately be practised.—Med. Times and Gaz., April 23, 1870.

CLINICAL LECTURE.

Clinical Lecture on the treatment of Stricture, Concussion of the Hip, Severe Sprains, and Recurrent Hemorrhage. By JAMES PAGET, Esq., F.R.S.—Mr. Paget lectured on two cases of retention of urine with slight stricture, in which the patients had been treated in the first instance by warm bath, laudanum, and rest, without catheterism, the last measure having been reserved until many days after the retention was relieved, and employed for the treatment of the purely organic stricture only. In one of the cases catheterism was attempted on admission, for a short time only, but unsuccessfully; this man had had incontinence of urine for six weeks before he got retention, and yet, after three weeks' treatment, by rest, alkalies, and plain diet, Mr. Paget was able to pass No. 9 without any difficulty into his bladder.

In the other case, retention was complicated by a perineal abscess, which was opened. The man was treated without any attempt at catheterism until the third week, when a single unsuccessful attempt was made; but a few days later Mr. Paget was able to pass No. 6 at once into the bladder. Mr. Paget dilated on the advantages of rest, the warm bath, and opium in relieving retention, and on the continuance of rest with alkaline medicines and unstimulating diet for the subsequent complete removal of spasm, and of that of swelling of the urethral mucous membrane which may not only produce retention, but, as in the first patient mentioned, may cause symptoms closely simulating those of the worst forms of organic stricture. The chronic congestion of the urethral mucous membrane, which probably existed in that patient and caused incontinence, was compared by the lecturer with chronic conjunctivitis and chronic swelling of nasal mucous membrane.

Mr. Paget considered that the perineal abscess, which formed in the second patient, was probably the result of inflammation in strictures contiguous to the urethra, but without any extravasation of urine. Many of the perineal abscesses formed in connection with retention were produced in this way, and not, as commonly taught, by ulceration of the urethra and localized extravasation.

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[1] See Observations by Dr. Greenhalgh, *Obst. Trans.*, vol. viii. p. 53.

Mr. Paget went on to remark on the morbid sympathies of the urethra, sympathies which were found in no other mucous track, and were quite peculiar to that over which the urine passed from the bladder. The first of these peculiar manifestations of sympathy with distant parts was the *syncope* which occasionally follows the passage of a catheter, and next was *epileptiform convulsion* from the same cause. Mr. Paget remarked that these two results never happened unless the patient were standing up, just as the same phenomena after excessive bloodletting were noticed only when the patient was in the erect position. Thirdly, *rigor* following the passage of instruments into the bladder was mentioned; this result was commonest in patients who had never been catheterized before, and unlike the two other phenomena, did not come on until water was passed for the first time after the use of the catheter. Rigor after catheterism was said to be commonest in persons who had ague, or who had lived in tropical countries, and the phenomena of the shivering fit were described as corresponding exactly with the course of an attack of ague. The rigor might often be prevented by the administration of brandy and water or other alcoholic stimulant immediately after the operation; and Mr. Paget spoke in high terms of Sir B. Brodie's practice in this respect.

In referring to the occasionally very dangerous character of these shivering fits, Mr. Paget mentioned that he had known death to follow simply sounding for stone in no less than six cases. As a rule, however, a rigor occurring soon after lithotrity, lithotomy, or the passage of a catheter, was not a dangerous sign. This brought the lecturer to his fourth peculiar sequence of catheterism and lithotrity, viz., the occasional occurrence of pyæmia, after a rigor, apparently from simple irritation of the urethra, and without any injury to its structure or effusion of urine. Mr. Paget then referred to another of these curious relations between the urethra and distant parts, *urethral rheumatism* (including the so-called gonorrhœal rheumatism), an affection which, if it could not be described as pyæmic, yet certainly presented many points of close resemblance to pyæmia.

Mr. Paget was of opinion that any inflammation of the urethra, whether contagious or not, might be followed by the swelling and effusion into the joints which characterizes urethral rheumatism. Lastly, Mr. Paget mentioned the connection which he believed to exist between certain cases of *sclerotitis* inflammation of the urethra and effusion into joints, inclining to the belief that patients in whom these conditions coexisted were often to be described as *gouty* rather than rheumatic.

Contusion of the Hip.—The first case was that of a man who fell, about a month ago, on his great trochanter, receiving no other injury than a severe bruise. Mr. Paget insisted on the importance of treating such cases by prolonged rest in bed as the best means known for averting the acute atrophy of the head and neck of the femur, which too often follows an injury apparently so trivial. After mentioning the ordinary signs of fracture of the neck of the femur, Mr. Paget stated that some of these, viz., pain on pressure about the hip, and inability to raise the heel from the horizontal position, are also generally present in cases of severe bruise of the hip. In the case of contusion, however, it was stated that this inability to raise the limb generally disappeared in a few days. On the important point of deformity, Mr. Paget said that it was of great consequence both for the patient's sake and the surgeon's reputation, to distinguish between the shortening of fracture, which comes on either immediately or at most, as in some cases of impaction, a few days after the accident, and that which occurs weeks or months after a contusion of the hip; the latter depending on atrophy of the head and neck of the femur, and the assumption of a too horizontal direction by the latter part. Mr. Paget remarked, that in young patients simple atrophy of bone was the only change observed, but that, in old persons, wasting of articular cartilage and the formation of nodules of bone about the margins of the joint generally occurred in addition.

Rupture of the External Lateral Ligament of the Knee-Joint.—In connection with this case Mr. Paget made some remarks on sprains in general, on their importance, and the necessity of treating them seriously, and often with all the attention which would be bestowed on a fracture, both to prevent the deformity arising from rupture of ligaments, and to ward off severe inflammation. Mr. Paget remarked that in every sprain there are two injuries to be considered—the stretching of the ligaments on one side of the joint, and the necessary crushing of the cartilage and bone to a corresponding extent in the other; and that, in his opinion, the latter injury, although commonly left out of consideration, is often really of major importance. In illustration of this opinion, Mr. Paget drew a comparison between the results of dislocation of the shoulder and ankle, in which there is extensive rupture of ligamentous structures, and sprains, in which there is, in addition, the crushing bone and cartilage; and stated that suppurative inflammation of these joints is much more frequent after sprains than after dislocations, the difference, in his opinion, being due to the bruising or crushing before referred to.

Recurrent Hemorrhage.—Mr. Paget applied this term to the bleeding which sometimes comes on within the first day or two of an operation, as distinguished from true secondary hemorrhage, coming on after about the fifth day. The patient upon whose case Mr. Paget lectured was a man for whom he performed Pirogoff's amputation last June, on account of disease of the ankle-joint, accompanied by extreme pain. The pain returned in the stump soon after the operation, and this induced Mr. Paget to remove the remains of the os calcis in the following October; still the man suffered in a most unusual degree from persistent pain in the part, which was unrelieved by all sorts of local and general anodynes; and on the 9th inst. Mr. Paget, therefore, amputated the leg at the lower third. An unusually large number of vessels required ligature, but bleeding had quite ceased when the patient was removed to the ward. Mr. Paget illustrated the general treatment to be pursued in cases of recurrent hemorrhage by the plan adopted in this instance. Anticipating the probability of bleeding, Mr. Paget had the limb slung, and the stump covered with a piece of lint and exposed to the air. About an hour after the operation, blood began to drip from the stump, because, the lecturer said, the muscular coats of the small arteries, which had contracted at the time of the operation, had become "tired" before time had elapsed for the formation of a clot or the adhesion of the flaps. Mr. Paget said that the first indications of treatment were to expose the stump thoroughly to the air and raise the limb, and these were carried out; still bleeding continued, and the next method, artificial cold by applying ice, was tried; this failed to arrest the hemorrhage for more than a very short time; and the third resource, compression of the main artery by a tourniquet, was employed, in order, as Mr. Paget observed, that, pressure being removed from the weakened vessels, they might again contract. The tourniquet was removed at the end of an hour on account of the pain caused by it; but, as renewed bleeding set in, the instrument was again applied, and the fourth plan of treatment, mentioned by the lecturer, was employed; viz, opening the flaps and tying the bleeding vessels. The flaps were then sponged with a disinfectant lotion; and thus, Mr. Paget said, another important indication was fulfilled—that of preventing putrefaction of any blood-clot that may remain or form subsequently in the stump, and thus warding off the occurrence of blood-poisoning. In mentioning pressure on the main artery, Mr. Paget reminded his hearers of the necessity, before proceeding to such an extreme measure as ligature of the main vessel, of ascertaining whether pressure on it does really stop the bleeding.

Mr. Paget remarked that recurrent hemorrhage is essentially the hemorrhage of reaction, coming on, as it does, not only when the small vessels are "tired," but at the time when the patient is recovering from the shock of the operation and his heart regaining power; coming on, therefore, quickly in robust patients, and tardily in those who are feeble and recover slowly from shock. In connection with the last point, Mr. Paget deprecated the plan of overstimulating patients after operation with the intention of quickly bringing on the stage of reaction, such a practice being very likely to be followed by recurrent bleeding. In noticing the conditions under which copious bleeding is to be expected at amputations, Mr. Paget mentioned the presence of morbid, especially cancerous, growths, the existence of acute inflammation in the part, and, lastly, the previous history of severe pain in the diseased limb or stump; and considered that the liability to abundant hemorrhage might be considered to vary directly, in such cases, with the severity of the pain. —British Med. Journ., Feb. 19, 1870.

HOSPITAL NOTES AND GLEANINGS.

Recovery from Pyæmia.—There is a man, aged 41, now in London Hospital, under care of Mr. Maunder, who has recovered after symptoms most probably due to pyæmia. He was admitted September 11th for a laceration of the forehead, on the right side, laying bare the bone. Erysipelas of the head and face followed; afterwards the whole of the right upper extremity became much swollen, but no abscess formed. The left thigh also swelled much about the same time, and a large abscess formed and was opened. Just before this swelling came he had two or three well-marked rigors, and he sweated a good deal after each one. The abscess began to discharge freely, the swelling of the right arm diminished, and no further serious symptoms arose.—Brit. Med. Journ., Jan. 15, 1870.

Pyæmia from Lacerated Wound of Buttock.—A few days ago we were present at a post-mortem examination of the body of a man aged 24, who was admitted into the London Hospital, on Nov. 19th, under the care of Mr. Maunder, for a lacerated wound of the buttock, produced by a fall on a hook. There was no injury to the bone. In about twelve hours he had a severe rigor, and his temperature rose to 103.4. The rigors were repeated on succeeding days, and he perspired freely. He became very weak, and a low form of delirium set in. He complained of severe pain in the left shoulder-joint, but no swelling could be seen. He died on the twentieth day after the accident. The lungs were found to be studded with very dark patches, looking just like pulmonary apoplexies. They were of all sizes; some of them showed signs of breaking down in the centre; many of them were situated just beneath the pleura. The disease, as Dr. Sutton remarked, was in too early a stage for abscesses to be found in the viscera. The spleen presented similar changes to those in the lungs. The liver and kidneys were unaffected.

Some of the most interesting pathological changes, however, were found in the left shoulder-joint. On making an incision to examine the joint, out came a fair quantity of a grumous mixture of blood and pus, which was infiltrated amongst the tissues around the joint. The cartilage was exceedingly thin on that part of the head of the bone in contact with the glenoid cavity. There were no patches of removal of cartilage, with vascular synovial fringes filling up the pits, such as are very generally seen in strumous arthritis.

Dr. Sutton also mentioned a well-marked case of softening on the right lobe of the cerebellum recently at the post mortem table. The case is reserved for detailed publication.—Ibid.

Perforation of Intestine; the Result of Supposed Laceration.—At a recent visit to London Hospital, we saw the examination of a man, who had been admitted under the care of Mr. Maunder, for suspected strangulation of a hernial tumour. The man had long been ruptured on both sides, and had worn a truss quite comfortably till the other day, when he had a severe fall, and the truss was driven against his belly. Pains in the abdomen and vomiting came on, and he was brought to the hospital. Mr. Maunder used the taxis under chloroform, and satisfied himself there was no strangulation of either hernial tumour to be detected. The vomiting and pain in the belly continued, and the man died about sixty hours after the accident.

On inspection, no wound, or bruise even, of the abdominal wall could be seen. When the abdomen was opened, evidence of suppurative peritonitis were found. Lying over the upper part of the ileum, there was some fluid fecal matter, and a little was also seen on the peritoneum as soon as the abdomen was opened. The lower coils of intestine were glued together, and the visceral peritoneum was very vascular. No opening could be seen in any part of the intestines while they were *in situ;* but, on slitting them up after their removal, an opening, about the size of a sixpence, was discovered in the upper part of the ileum. The edges were rounded and everted; there was a little evidence of swelling and some firmness to the touch, but nothing like fibroid or chronic induration The mucous membrane immediately around the ulcer was slightly abraded, and there was also a minute superficial ulceration on one side of it, to the extent of an eighth of an inch; but it was so superficial that it was only by very careful examination that the valvulæ conniventes could be seen to be interrupted at this spot. The peritoneal surface, around the external opening of the ulcer, was injected, and there was a quantity of dirty-yellow, fecal-stained lymph adherent to the peritoneum for some distance above and below it. The ulcer was on the free border of the intestine.

In connection with this case Dr. Sutton remarked that experience has shown that internal organs may be lacerated by a blow on the surface of the body, without the skin or integuments being wounded, there being little or no external signs of injury. For instance, a blow on the chest has been known to rupture the posterior wall of the aorta. He well recollected a case he had seen at Guy's Hospital, in which, after death, a rupture of the small intestine was found; and the only history obtained was that vomiting, etc., had come on immediately after violent efforts to lift a barrel full of beer. There was no external sign of injury.—Ibid.

DOMESTIC INTELLIGENCE.

American Medical Association.—This Association held its 21st annual meeting on the 3d of May, in Washington, D. C., and continued in session for four days. The proceedings of each meeting have hitherto been regularly chronicled in this journal, and could we feel it to be advisable, we would be happy now to continue the practice; but we are mortified to have to confess our conviction that the interests of the profession will be best subserved if the veil of oblivion be thrown over the greater part of the proceedings of the last meeting. The prominent political and social fanaticisms of the day, and private grievances and animosities were allowed to be obtruded upon the attention of the Association, giving rise to exciting and irritating discussions, thus occupying valuable time with matters entirely foreign to the great objects of the Association. These objects as announced at its organization were: 1st, "The maintenance of the honour and respectability of the profession;" 2d, "The advancement of their knowledge and the extension of their usefulness;" 3d, "The securing a uniform and more elevated standard of acquirements for the degree of M. D.;" and 4th, "The adoption of a code of medical ethics for the government of the profession." It would be difficult to show that any of these first three objects were promoted at the last meeting, or that the spirit of the 4th was respected in the discussions which took place.

The atmosphere of Washington seems more congenial for politicians than for men of science, and so the Association appears to have discovered, for it rescinded the resolution requiring its meetings, to be held every alternate year in that city.

If the delegates at the last meeting truly represented the profession, it is evident that there exist discordant elements, which it will be difficult if not impossible to harmonize at present, and which preclude the hope of the dignity and interest of the profession being maintained under existing circumstances at future meetings.

Dr. Alfred Stillé, one of the founders of the Association and its first Secretary, was elected President for the ensuing year, and the meeting adjourned to assemble at San Francisco, California, in May, 1871.

Having been one of the founders of the Association, and one of its early earnest supporters, we may be excused for expressing the hope that dispassionate reflection during the coming year, and an entirely new scene of meeting, may lead those who shall then assemble to rigidly restrict themselves to the promotion of the legitimate objects of the Association, firmly refuse to allow illegitimate subjects to be introduced, and thus restore the cordial and fraternal harmony which strikingly characterized the early meetings of our national medical congress.

The business of the different sections seems to have been conducted with the usual harmony, and we learn that some interesting papers were read before them.

In the Section on Surgery and Anatomy, Prof. S. D. Gross, Chairman, papers were read on median lithotomy by Dr. J. L. Little, of New York; on a case of imperforate anus, by Dr. Healy, of Indiana; on a form of neuralgia of the jaw bones not yet described, by Prof. Gross; case of large fibro-sarcomatous tumour of the upper jaw, operated on by Prof. Kinloch, of Charleston, S.C.; on reflex paralysis produced by congenital phymosis, by Dr. Sayre, of New York; on the application of carbolic acid as a remedy for purulent conjunctivitis, by Dr. Rogers; a formula for the preservation of a liquid for the preservation of wet anatomical preparations, and for injecting subjects, by Dr. Titcomb, of Baltimore; case of congenital closure of the rima glottidis, by Dr. Elsberg, of New York; on the reduction of dislocation of the shoulder-joint by a new method, by Prof. Logan, of New Orleans; on extraction by direct incision of a fibro, cartilaginous tumour of the knee-joint, by Dr. A. B. Stewart, of Minnesota; on a plastic operation on the face, by Dr. G. Buck, of New York; on a modification of Pirogoff's operation, by Dr. Quinby; on the comparative merits of lithotrity and lithotomy, by Dr. Moore, of Buffalo; on the treatment of malignant tumours by electrolysis, by Dr. Neftel, of New York; on idiopathic lateral curvature of the spine, by Dr. B. Lee; on the use of glasses in hypermetropia, by Dr. Pomroy; verbal communications were made by Dr. Ohr, of Indiana; Dr. Atlee, of Lancaster, Pa.; Dr. Otis, &c.

In the Section on Physiology and Microscopy, Dr. F. H. Gatchell, chairman, a paper was read on the cellular structure of the red-blood corpuscle, by Dr. Jos. G. Richardson, of Philadelphia.

In the Section on Practice of Medicine and Obstetrics, Dr. Jos. Kammerer, chairman, a paper was read on the use of the sulphite of soda, and on the internal use of glycerine, by D. Griscom, of New York.

In the Section on Meteorology and Epidemics reports were read on the diseases of Pennsylvania, by Dr. D. F. Condie, of Philadelphia; and on those of Illinois by Dr. Hammond.

In the Section on Psychology, Dr. W. Gray, of Utica, chairman, a paper was read on institutions for the insane, by C. A. Lee, of New York.

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National Medical Convention for revising the Pharmacopœia.—The sixth decennial meeting of this Convention was held in Washington on the 4th of May. Prof. Joseph Carson was elected President.

Reports were received from various societies, and those not prepared to report were granted permission to hand in their reports to the Committee on Revision.

A committee was appointed to report a plan for the revision of the Pharmacopœia, which submitted a report providing for the appointment of a Committee on Revision and Publication; also, recommending that the measures of capacity be abandoned in the Pharmacopœia, and that the quantities in all formulas be expressed both in weights and in equal parts by weight. The report was adopted, after being amended that the committee should meet in Philadelphia. The committee was also authorized to investigate any new medicine that may be brought forward in the future, and devise formulas for the appropriate preparations of it.

The delegates from the various institutions then selected a nominating committee which in turn reported the following committee to revise the Pharmacopœia: Dr. G. B. Wood, Alfred B. Taylor, Jno. M. Maisch, Dr. Robert Bridges, Philadelphia; Dr. Edward R. Squibb, New York City; Albert E. Ebert, Chicago, Ill.; J. Tarris Moore, Baltimore, Maryland; G. F. Markoe, Boston, Mass.; Dr. John C. Riley, Washington, D. C.; Dr. Thomas Jenkins, Louisville, Ky.; Dr. Charles A. Lee, Buffalo, N. Y.; Dr. J. S. Welford, Richmond, Va.; William F. Wentzell, San Francisco, Cal.; W. S. W. Ruschenberger, U. S. Army and Navy.

Dr. B. F. Craig, of the District of Columbia, offered a resolution, which was adopted, "That the Committee of Revision be instructed to include some part of the metrical system in the list of officinal weights and measures."

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Power of Nature in the Cure of Disease.—There seems to be a large class of practitioners who entirely ignore the power of nature in the cure of disease, and of its ability to relieve the system from the effects of poisons. We often receive, and also find recorded in the journals, vaunted cures of tetanus by some article of the materia medica which happened to be administered at the time, the reporter overlooking the fact that the same article has over and over again failed in other cases; and even that some more potent measure, such as amputation of the injured limb, may have been employed at the same time. This last, if it fails to cure in many instances, still may exert too important an influence to be entirely ignored. It should further be remembered that more than fifty medicinal agents of the most varied and even contrary action have been claimed to have effected cures of this affection, and yet the mortality from it continues undiminished.

We likewise have received accounts of numerous cases of opium poisoning supposed to be cured by belladonna, and of belladonna poisoning believed to be cured by opium, and of strychnia poisoning cured by various articles. Now, without denying the possible antagonism of opium and belladonna, the fact must not be overlooked that both of these poisons, as well as strychnia, snake-poison, &c., may be eliminated from the system by the natural emunctories, especially by the kidneys, and that if the patient can be kept alive long enough to enable the emunctories to eliminate those poisons, recovery from their effects will take place. Without wishing to discourage the use of antidotes, we desire to impress upon our readers that the great object should be to maintain life as long as possible, so as to afford time for the eliminative process to be accomplished, and that in order to duly determine the effects of supposed antidotes the powers of nature should not be ignored, but that an effort be made to determine the precise agency of these two powers in every case of recovery, so that the real value of the so-called antidotes may be the more certainly determined.

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Conversazione of the Biological and Microscopical Section of the Academy of Natural Sciences of Philadelphia.—The Academy of Natural Sciences, the members of which have been for more than half a century diligently devoted to the study of the natural sciences, and have contributed so largely to diffuse a taste for their cultivation by liberally throwing open their extensive and magnificent museum to the public, has attached to it several sections, each devoted to the special study of some one of the departments of science. The Biological and Microscopical, one of the most active of these Sections, held their first conversazione in the spacious hall of the College of Physicians, the use of which was liberally granted for the purpose, on Friday evening, May 13th. The rooms were thronged during the whole evening and up to an unusually late hour, by a highly intelligent and appreciative assemblage.

Entering the vestibule, which, with the spacious stairway, was elegantly decorated with plants, visitors first passed into the southwest museum room of the college, which was appropriated to the exhibition of the costly apparatus of Dr. J. Solis Cohen for illustrating the phenomena of voice and hearing, among which was the double siren of Helmholz, the simpler apparatus of Lissojou, for giving optical expression to the vibrations of tuning-forks, and thus studying their forms in combination; the manometric flame apparatus of Kœnig for the visual expression of the vibrations of organ pipes, and the optical study of the numerical values of musical intervals; the apparatus of Dr. Melde, of Marburg, Marlowe's differential sonometer, with many other interesting instruments and elaborate drawings. Dr. Cohen was assisted by Prof. Houston, of the Central High School, who, besides, contributed a very large siren after Helmholz, and other valuable apparatus.

In the adjoining southeast room, Prof. R. E. Rodgers, of the University, untiringly exhibited from time to time during the evening, some of those brilliant experiments with electricity which have rendered the University additionally famous as a centre of electric light, unveiling the mysteries of the telegraph, the electrical machine, &c. &c., with wonderful clearness of explanation and illustration.

The large lecture room was appropriated to an exhibition of the gas microscope by Dr. J. Gibbons Hunt, which constituted one of the most interesting portions of the evening's entertainment. A power of 255 was used, and gave a flat field covering a screen ten feet square, upon which more than fifty natural objects (not photographs) were shown, ranging through the domains of anatomy, botany, and entomology. The cell structure and spiral tissues in plants, together with the glands of Nepenthes Diosera and the irritable leaf of Dionea, so interesting in a physiological point of view, came clearly out on the canvas. Our smallest flowering plant, the Wolffia Columbiana, revealed its cell structure and also the little depressions, some specimens having young ones attached to the parent plants, as they were made to roll across the screen. Among the anatomical specimens those showing the vascular system of the kidney, the cerebrum of the cat, the villi of the human colon, and the respiratory tubes in the larva of Dityscus were brought out with wonderful distinctness, while the plates and anchors of Synapta were projected on the canvas clearer and sharper than in any photograph. A scorpion filled the screen with all its parts distinct, and in focus at the same time, while moths and butterflies came out on a field perfectly flat with a definition that revealed the minute scales on their wings.

The southeast library room was occupied by Dr. W. W. Keen, and Professor J. H. McQuillan of the Dental College, with a fine collection of anatomical models, and by Dr. M. J. Grier, with a very complete exhibition of electro-magnetic and electro-galvanic apparatus, which, in view of the most important uses of these agents in therapeutics, deservedly attracted a large share of attention. Among the curious and interesting electro-galvanic apparatus displayed by Dr. Grier, was an ingenious thermometer, whose column of mercury was so arranged, that it completed a galvanic circuit, converting a bar of soft iron into a magnet, and so set ringing a little alarm bell, which drew attention to the fact that the apartment in which it was placed had become overheated. A pulse telegraph attracted much notice, as did also the different forms of batteries adapted to a great variety of medical purposes.

The southwest library room, with the adjoining one, occupied by Dr. Samuel Lewis' very valuable collection of medical works, was fitted up with tables along their whole length and devoted to the exhibition of about seventy microscopes, embracing those of highly primitive construction, dating back to the year 1704, as well as including the most perfect and costly microscopes, the masterpieces of our own and foreign manufacturers. Among the opticians represented, we observed Messrs. Zentmayer, Queen & Co., and McAllister of this city, Tolles of Boston, Wales of New Jersey, Spencer of New York, Powell & Lealand, Ross and Smith & Beck of London, Hartnack, Nachet and Chevalier of Paris, &c., the total value of instruments and apparatus probably not falling short of $20,000. Each microscope had arranged beneath it some object suited to its power, and was placed under the care of a member of the Society, who from time to time adjusted or changed the object and took pains to explain the peculiarities of the instruments and of the structures to the constant and large stream of visitors. Prominent among the attractive objects were, the wonderful type plate of the diatomaceæ, the exquisite stereoscopic view of the hibiscus, under the binocular, specimens of an elytrum of the diamond beetle, and of naphthaline as seen by polarized light.

We most heartily congratulate the Society upon the remarkable success of this their first conversazione, and trust that they may be sufficiently encouraged by the scientific public, to be enabled to continue annually these delightful reunions.

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New Medical Journals.—The number of these which have appeared or been projected during the past year is unusually large. There seems to be the same rush into journalism as there was to the gold fields of the Pacific coast some years since, and we trust it will prove equally remunerative; at all events we must admire the courage of those engaged in these enterprises. We wish them all success, and fraternally welcome them to our exchange list. In addition to the new journals already announced (see p. 25 of this volume) we have received during the last month two more: 1st, the "National Medical Journal," edited by C. C. Cox, M.D., &c. &c., the first number of which was issued at Washington, D. C., in May last, and makes a creditable appearance. It is announced to appear quarterly hereafter, each number to contain not less than 128 pages 8vo. Terms, three dollars a year.

2d, "The Indiana Medical Journal," edited by Drs. Thad. M. Stevens, W. B. Fletcher, and Guido Bell, the first number of which was published at Indianapolis last month, and is to appear monthly hereafter, each number to contain 32 pages, at one dollar and a half a year.

A new journal has been projected in Philadelphia, to be called "The Medical Times," the first number of which will be issued, we learn, on the 1st of October next and semi monthly thereafter. The enterprise is in good hands, and we feel assured that it will materially advance the medical interests of Philadelphia by the publication of regular and authentic clinical reports from our various hospitals, infirmaries, dispensaries, etc., which will exhibit the immense resources possessed by our city for clinical instruction, and the very large amount of cultivated intelligence and zealous industry engaged in that work.

We have before us the prospectuses of

two other projected journals, one, "The Medical and Surgical Journal of the Northwest," to be issued monthly at St. Paul, Minnesota, by Alex. J. Stone, M. D., of Stillwater; the other, "The Cotton Zone Central Journal of Medicine," to be published at Atlanta, Georgia, under the editorial direction of Wm. A. Love, M. D., of Albany, Georgia.

FOREIGN INTELLIGENCE.

Chloral and Chloroform.—Communications on chloral multiply daily. Among some of its curious effects may be noticed an observation of M. Liégeois at the Sociète de Chirurgie that in a case in which he had performed a minor operation under the influence of chloral, which produced sleep, but not anæsthesia, he resorted to chloroform. To his great surprise he found that the association, so far from increasing the effects, gave rise to excitement which lasted as long as the inhalations were continued. The fact is the more to be remarked as tending to disprove the identity of action between chloral and chloroform insisted upon by Liebreich. M. Giraldés, proceeding in a different direction, administered to infants who have been chloroformed and remained very agitated, a chloral draught. The effect of the association was to produce peaceful sleep for from five to eleven hours. Since then he has frequently employed chloral, either in mixture or enema, whenever children have remained excited after chloroform, and always with success. M. Demarquay observed that he has continued with advantage his practice of giving patients immediately after operation successive doses of 2 or 3 to 5 grammes of chloral until sleep is produced. All subjects are, however, far from exhibiting the same effects from the action of chloral. In some, when it is given immediately after the operation, it produces a quiet sleep and deep calm which lasts all day, and prevents any of the pain consequent on the traumatism being felt. Others proved refractory to the action of chloral, which is sometimes rejected by vomiting. As a medium dose he gives 2 grammes in two spoonfuls of syrup diluted with water. M. Giraud-Teulon has observed the same excitement produced by administering chloral in children that have been etherized as related by M. Liégeois in those who have been chloroformed.—Med. Times and Gaz., April 23, 1870.

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New Remedies for Burns.—Two new remedies for burns are added to the long list. The first is charcoal. A piece of vegetable charcoal laid on a burn at once soothes the pain, says the Gazette Médicale, and if kept applied for an hour cures it completely. The second one is sulphate of iron. This was tried by M. Joel in the Children's Hospital, Lausanne. In this case, a child, four years of age, had been extensively burnt, suppuration was abundant and so offensive that the ward was uninhabitable. M. Joel ordered the child a tepid bath, containing a couple of pinches of sulphate of iron. This gave immediate relief to the pain, and being repeated twice a day—twenty minutes each bath—the suppuration decreased, lost its odour, and the child was soon convalescent.—Med. Press and Circular, April 6, 1870.

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Corradi's Urethral Dilator.—M. BROCA presented, a short time ago, to the Imperial Academy of Medicine, a report upon a urethral dilator of M. Corradi. The instrument distends the urethra without tearing the mucous membrane or the actual texture of the canal. It consists of two slender silver rods joined at their vesical extremity, making up a thickness of No. 2. By means of a mechanism at the handle, one of the rods can be shortened, and it thereby bends on the other like an arc upon its cord. The instrument being introduced beyond the stricture, the rod is shortened, and the whole slowly withdrawn. The dilatation in the transverse direction is not painful, causes no hemorrhage, and immediately afterwards No. 12 French (about No. 4 English) can be introduced. The size of the bougies is then rapidly increased; and in a week a full-sized instrument can be passed. It is clear that M. Corradi's view is to shorten the earlier stages of ordinary dilatation, whilst Perrève's and Holt's instruments regularly break up the urethra.—Lancet, April 16, 1870.

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Thymol, a New Disinfectant.—This substance, properly called thymic acid, is recommended as a new disinfectant, in many respects preferable to carbolic acid. From several observations communicated by A. Paquet, it appears that in the undiluted state it is a powerful escharotic, useful especially to remove warts and cauterize hollow teeth, in which cases it acts without producing pain, and gives to the breath a far more agreeable odour than carbolic acid. An aqueous solution of it (1 : 1000) acts upon healthy ulcers without irritation, rather like a cooling application and antiputrid dressing, and puts them in a healthy condition. The same is the case with putrid ulcers in the cavities of the body, and by injecting into natural specimens a mixture of four parts of thymol, two parts of aniline, and four parts of tannic acid in 100 parts of glycerine, they may be made to keep for a month of a normal volume and colour.

This stearopten of the oil of thymus vulgaris, though somewhat scarce and expensive, may in many cases be used as a substitute for the never odourless carbolic acid, and in much more dilute solutions.—Druggists' Circular and Chem. Gaz., May, 1870.

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Mobility of the Liver.—An interesting, and perhaps unique, case of extreme mobility of the liver has been recorded by Professor Cantani. The patient was a lady, aged 54, and eleven years previously, immediately after her last confinement, the liver had descended from its usual place into the hypogastrium, occupying a position extending from the umbilicus nearly to the symphysis pubis. The liver was of normal size, and could be freely moved in every direction, and, by placing the patient in a recumbent position, with the sacrum elevated upon a cushion, it could easily, with a little manipulation, be returned to its place, descending again when she reassumed the erect position. During the whole period of eleven years it had occasioned no injury to health, and but little inconvenience; but as it had been diagnosed in the beginning as a uterine tumour, the lady had become a prey to hysteria and melancholy, believing herself to be a victim to an incurable disease, and these symptoms had been considered as a proof of the diagnosis. On being reassured as to the nature of the supposed tumour, she rapidly regained her former health.—Med. Times and Gaz., April 9, 1870.

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Ingestion of twenty-five drops of Croton Oil by a Man; Recovery.—A case of this kind was published in the Tribune Médicale of Paris (No. 93), relating to a little girl six years old. The child recovered after severe vomiting, and hardly any diarrhœa. Dr. Augé, of Reuilly (France), has lately communicated to the same journal the above-mentioned case. A mistake was made between the cough mixture and a small bottle containing croton oil, to be used for frictions beneath each clavicle. It is calculated that about fifty-five drops were swallowed. There was some diarrhœa and feverishness for three or four days; but the patient was not much distressed, and finally recovered. M. Augé thinks that the oil, instead of being absorbed, spreads on the moist mucous membrane of the stomach. The medico-legal bearings of such a case are very important. — Lancet, April 16, 1870.

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Influence of Atmospheric Dust in the Production of Disease.—At a late meeting of the Imperial Academy of Sciences an interesting paper was communicated by M. Dumas, in the name of M. Wiestyn, concerning the influence of atmospheric dust on the production of disease. M. Wiestyn observes that the ventilating machines of the various hospitals and places of public resort pump up with the air of the wards and theatres the germs which escape from the bodies of the patients, &c., and then let them fall over inhabited localities, where they produce mischief. The author therefore suggests that, before escaping from the ventilators, the air should be subjected to a very high temperature, so that all the germs which it contains may be completely destroyed.

In connection with this communication, M. Sainte-Claire Deville made some noteworthy remarks concerning various experiments which he had instituted during the choleraic visitation four years ago. He then recognized that the odour emitted by the patients was sometimes acid and at other times alkaline. It was acid in the wards inhabited by children or females. The alkaline odour, he said, was produced by ordinary ammonia or triethyl ammonia. Besides this, the presence of numerous organic germs was traced in the air of the wards, and it even happened that some of the experimenters suffered from their contact. M. Sainte-Claire Deville warmly advocated the employment of calcination of air as a means of destroying the germs, and preventing the extension of the epidemic.—Lancet, April 2, 1870.

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Smallpox in Paris.—In M. BESNIER'S report on the diseases prevailing in Paris during the first quarter of the present year, he gives an interesting account of the course of the epidemic of smallpox still raging in that city. It commenced in November, 1869, when diseases from this cause exhibited a sudden increase. During the winter it underwent a considerable exacerbation, proceeding in this respect in conformity with the usual course of smallpox. On examining the mortality returns from variola during the last ten years, M. Besnier states he finds the minimum is always in the months of June, July, and August, when, increasing somewhat in September, it pursues a regularly ascending course during the winter, to decline again in the spring, and fall to the minimum in summer. If this rule is to hold good the present epidemic must soon exhibit a decrease. Not only is the disease most frequent in the winter, but its proportionate fatality is greatest in that season. The entire number of deaths from variola during the first quarter of 1870 was 2266—viz., 681 in January, 747 in February, and 838 in March. In ordinary times smallpox follows pretty much the course of other diseases in its relative prevalence in the different arrondissements, but during epidemics, the differences in this respect, although still observable, are much less marked. The great number of cases occur between the ages of twenty and thirty, males being more frequently its subjects than females. The mortality which ensues does not follow this rule in the present epidemic any more than in former epidemics. Thus, for the months of January and February the mortality of adult males was 20.16 per cent., and of females 21.87 per cent.; and of males under sixteen it was 34.47 per cent.; and for females of the same age 36 66 per cent.—not counting the children at the Foundling Hospital, where it was 40 per cent. M. Vacher has established the great fatality of variola during the first year of life; viz., ten times greater than at the period between twenty and thirty; and, moreover, it is even very considerable during the first three months, contrary to an opinion generally entertained, and which has given rise to a false security, in relation to early vaccinations. Observation during the present epidemic shows even more powerfully than on former occasions, the important mitigating power exerted by vaccination in the numerous cases in which smallpox has succeeded it. The report also details various examples of the slighter protection afforded by vaccination when only performed during the imminence of variola. With respect to the treatment of variola, the only new point of interest is the successful employment of phenic acid in large doses by M. Chauffard. M. Besnier has, since this means has been announced, given this substance to all his numerous cases of variola in quantities varying from 25 centigrammes to 1¼ gramme per diem; and the results have seemed to him decided enough to induce him to still continue the treatment by giving it at an early stage of the disease; and in several cases which appeared as bad as possible, a successful result was obtained. Consecutive abscesses were also observed to be much less common. M. Moissenet has found great advantage to accrue from adding a litre of Labarraque's liquid to each of the baths he always employs. The patients derive great comfort from the baths, and the horrible odour which accompanies the suppuration disappears.—Med. Times and Gaz., May 7, 1870.

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OBITUARY RECORD.—Died, in Edinburgh, on the 8th of May, of angina pectoris, complicated with heart disease, in the 59th year of his age, SIR JAMES YOUNG SIMPSON, BART., a man whose attainments as a physician and scholar have enrolled him among the most illustrious names of the century. No physician of the present day — scarcely, indeed, in the history of medicine—has left a more permanent or brilliant record of the utility of his life, or the versatility of his genius, than has the distinguished Professor of Midwifery in the University of Edinburgh. For forty years he toiled unceasingly for the advance of medical science, and his numerous contributions to medical literature attest the deservedness of the reputation he achieved.

Born at Bathgate, in 1811, Sir James, then poor and almost friendless, pursued his literary studies in the University of Edinburgh, and by winning a scholarship, which carried money with it, was enabled to pass from the literary to the medical class. In 1832 he took his degree of M.D., and became assistant to Prof. Thompson in the chair of Pathology. He soon after gave lectures on midwifery in an extra-academical school in Edinburgh, and, in 1840, at the early age of 29, was elected Professor of Midwifery in the University of Edinburgh. He proved a most popular and instructive lecturer, and his audience were absolutely fascinated by the force of his arguments, and the appositeness of his illustrations. His class-room soon became one of the most popular in the school, and his teachings added new lustre to the prestige of the ancient University.

As a practitioner he was also eminently successful, and his advice was eagerly sought by patients from every clime. Amid the bustle and anxiety of perhaps the largest practice ever possessed by any physician, he constantly found time for experiment and writing, in which were ever reflected the fertility of his genius, the originality of his thought, and the philanthropy of his mind. Among the most remarkable of his many literary contributions may be enumerated his "Obstetric Works," edited by Drs. Priestley and Storer; his treatise on "Acupressure;" his eloquent and masterly refutation of Homœopathy; his archæological researches; "Was the Roman army provided with medical officers;" "Sculptured Stones of Scotland," "Notices of Leprosy and Leper Hospitals in England and Scotland," and other works which gained for him reputation as an antiquarian.

His early recognition and earnest advocacy of the advantages of anæsthesia in surgery and midwifery, notwithstanding the difference of opinion which may exist as to the value of the particular anæsthetic (chloroform) which he introduced into use and recommended, entitle him to the gratitude of humanity.

In December, 1859, Sir James promulgated his views on the arrest of hemorrhage by acupressure, a method which he had devised, and hoped would wholly supersede the ligature, and secure, as a rule, the primary union of wounds. He advocated them with an amount of zeal, learning, and experimental research which did not fail to excite general admiration. The method is yet on trial, and does not lack enthusiastic supporters.

His medical papers were always characterized by originality and force. In 1868 he proposed "to stamp out small-pox" by isolation, and in the following year he, with characteristic energy, began the discussion on "Hospitalism." That out of eighteen amputations but two should recover was to Sir James a result intolerable, and, with great energy and much laborious research he waged a fierce war against colossal hospital buildings. Although errors crept into his statistics, and fallacies were found in his arguments, yet in the main his conclusions were right, and will doubtless result in the greatest good. Even though we are unable to prophesy what the remedy will be, yet we cannot doubt that all who, in the future, submit to capital operations in large hospitals will owe a debt of gratitude to Sir James Simpson for largely increasing their chance of recovery.

Sir James's labours were not without recognition in his lifetime. For his services in connection with anæsthesia he was, in 1853, elected a foreign associate of the French Academy of Medicine; and for the same cause, in 1856, he received the Royal Order of Knighthood of St. Olaf from the late King of Sweden. From the French Academy of Science the Laureateship and gold medal, and the Monthyon prize of 2000 francs "for the most important benefit to humanity." In 1866 he was created a baronet by her Majesty Queen Victoria, and in the same year received the degree of D.C.L. (Oxon.). In 1869, a few months before his death, the freedom of the city of Edinburgh was presented by his fellow-citizens, through the Lord Provost, to him "whose numerous and varied contributions to medical science and literature, and particularly whose distinguished discoveries and appliances for the alleviation of human suffering have seemed to maintain and extend the reputation of this city and medical school, and entitle him to the respect and gratitude of his fellow-citizens." This was the only occasion, with a single exception, of a similar honour being paid to any citizen of Edinburgh. He held the appointment of Physician Accoucheur to the Queen in Scotland, and was member of many learned and scientific societies.

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VOL. XXVIII. JULY, 1870. No. 331.

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CLINICS.

CLINICAL LECTURE.

Clinical Lecture on Latent Scarlatina followed by fatal Uræmia.—By CHARLES MURCHISON, M D., Physician to the Middlesex Hospital and Lecturer on the Practice of Medicine.

Gentlemen: The important practical lessons to be learnt from the case which to-day I bring under your notice will, I trust, be indelibly impressed upon your memory. We have just been witnessing the post-mortem examination of the body of William C——, aged twenty, a French-polisher, who was admitted into the hospital on Sept. 27th, 1869, and who, during life, presented all the symptoms in a typical manner of acute nephritis. About a fortnight before admission dropsical swelling had appeared in his legs, and his friends had noticed a puffy swelling of the face. The urine at the same time became scanty and high-coloured, and during the week prior to admission he had suffered from headache and occasional vomiting. Throughout the fortnight the bowels had not acted except after taking purgative medicine. At the time of admission there was considerable general anasarca; the face was puffy, pasty, and anæmic; but there was no evidence of fluid in the serous cavities. The pulse was 72, and the respiration 16; the physical signs of the heart and lungs were normal; tongue slightly furred, appetite good, but frequent retching of watery fluid; bowels freely open by medicine. Much headache; pupils large; little sleep, but mind clear. No pain nor tenderness in loins. Urine scanty, of sp. gr. 1018; deposited after boiling two-thirds (in volume) of albumen, and contained numerous blood corpuscles and renal epithelium cells. No desquamation of cuticle.

The proper treatment in any case presenting the symptoms now described is to

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relieve the kidneys by inducing free action of the skin and of the bowels. Accordingly the patient had a warm bath and afterwards was kept warm in bed; half a drachm of compound jalap powder was given at once, and a draught containing two drachms of liq. acet. ammoniæ and a scruple of acetate of potash was ordered to be taken every four hours. On the following day the patient seemed better; there was moderate perspiration, but the bowels had acted only slightly. A drachm of compound jalap powder was now ordered. Through some negligence on the part of the nurse, this powder was not given; but in the evening the bowels acted twice, and the patient was very improperly permitted on both occasions to traverse the whole length of the ward in going to the water-closet. After this he slept well till five next morning, when he passed some urine less smoky than before, but containing one-half of albumen. Shortly after this the nurse's attention was attracted by his breathing being loud and stertorous, as if he were recovering from a fit. At 5.30 the jalap powder was given, but at 6, and again at 7, he had a fit of violent convulsions, with foaming at the mouth and lividity of the face. He regained consciousness after these fits and complained of intense headache. He had a warm bath after the second fit; but at 8 A.M. he had another fit, and after this he remained in a state of profound stupor and great restlessness, interrupted by a return of the convulsions about every half-hour, until his death about 7 P.M. The pupils were mostly contracted, but dilated during the convulsions. No urine was passed after 5 A.M., and the breath had a fetid ammoniacal odour, but there was profuse perspiration. A bladder of ice was kept applied to the head, and at my visit at 1 P.M. two drops of croton oil were given by the mouth, and the patient was bled from the arm to 14 oz. For about half an hour after the bleeding there seemed to be a slight improvement; the patient was less restless, his breathing was quieter, and his expression less heavy.

At the autopsy, the blood throughout the body was found to be black and fluid. The spleen was large, weighing 10 oz., and diffluent, like the spleen of typhus. The heart was healthy, and the lungs congested. The peritoneum contained 6 oz. of clear serum, the pericardium 2 oz., and each pleura about 4 oz. The brain presented nothing abnormal beyond considerable congestion and an ounce of clear serum at the base. Both kidneys were much enlarged, weighing together 15 oz.; their surfaces were smooth, and their capsules here and there slightly adherent. The cortex was much hypertrophied and generally pale and opaque, but the pyramids and the Malpighian bodies were intensely congested and dripped with blood on section. The uriniferous tubes were crammed with granular epithelium, and some of them contained extravasated blood. The bladder was empty.

Here, then, we had a typical case of acute nephritis proving fatal by suppression of urine and blood poisoning. The small quantity of urine voided immediately before the fits had probably been secreted some time before; none was secreted afterwards. The fact, however, that the case was a good illustration of acute nephritis was not the chief reason that induced me to make it the subject of this lecture. It is to the cause of the attack that I wish particularly to direct your attention. Almost all of the cases of acute nephritis which you meet with in practice are referable to one of two causes, viz: 1, a chill, as from exposure to cold and wet; and, 2, some poison in the blood, and especially that of scarlet fever. With regard to a chill, you must remember that it is only under exceptional circumstances that it excites nephritis. Supposing twenty or thirty persons all exposed to the same cause of chill, nephritis would occur probably in only one; and it would be found that this person was of adult or more advanced life, and that he had either led an intemperate life or had previously given evidence of chronic disease of the kidneys. Our patient, however, was young; he had previously enjoyed good health, and been very steady and temperate. For these reasons, and knowing how usually prevalent scarlet fever is at this time, one of the first questions I put to the patient was whether he had recently recovered from scarlet fever; but both he and his friends denied all knowledge of his having suffered from it or of his having been exposed to it. It was only on cross-examination that we discovered that a month before admission, or a fortnight before the appearance of the dropsy, the cuticle had peeled off his hands, and that for this he consulted a surgeon, who prescribed an ointment. While this desquamation was going on he felt weak and out of sorts, and he went to Weymouth for four days. On his return his friends observed that he did not seem much the better for his holiday, and he first felt his throat a little sore; but, prior to the desquamation, he had not had sore-throat nor eruption, and he had not given up work. It was further ascertained that, while this desquamation was going on, his three younger brothers and sisters were confined to bed for two or three days with sore-throat and fever, and his elder brother, although he had no sore-throat, and did not give up work, also felt ill. No eruption was observed in any of the four. In the face of these facts, no one will dispute that the nephritis in our patient was determined by an attack of scarlet fever.

The practical lesson which I wish you to learn from this case is, never to neglect a mild case of scarlet fever. You will constantly be consulted in the case of children who, after a known exposure to scarlet fever, have the symptoms in so mild a form that they are scarcely thought to be ill. The practice is far too common of permitting such patients to be up and to go about as usual; and, indeed, in more developed cases of scarlet fever, the patient is often allowed to leave his bed much too soon. In numberless instances I have known this practice result in nephritis, sometimes terminating fatally by uræmia, or by secondary pericarditis, pleuro-pneumonia, gastro-enteritis, &c.; and at other times ending in chronic, but permanent, degeneration of the kidneys. During the third and beginning of the fourth week of scarlet fever, the urine often contains albumen, and the kidneys are more or less congested. You would be astonished to find how much albumen may sometimes be present, without any dropsy or other symptom of renal disease. But if during this time the transpiration of the skin be checked from any cause, the congestion of the kidney may become converted into nephritis. It is a good rule, therefore, to keep every patient recovering from scarlet fever in bed or in a warm room for at least three weeks from the commencement of the attack, and not even then to permit a change if desquamation be going on, or if the urine contain albumen. The rule is sometimes difficult to enforce; but the present inconvenience of the practice ought to weigh for little against the possible dangers from this neglect. For nearly ten years this rule has been followed at the London Fever Hospital with this result, that nephritis as a sequel of scarlet fever has, during that time, been almost unknown there, except when it has occurred prior to the patient's admission.

Lastly, the neglect of slight cases of scarlet fever probably contributes much to the spread of the disease. Many observations have satisfied me that the attacks of sore-throat, to which even adults (who may already have had scarlet fever) are liable after much exposure to scarlet fever, may be the means of propagating the disease; and you must bear in mind, what I have so often told you, that the most malignant attack of scarlet fever may be contracted from a person suffering from it in the mildest form. The nature and severity are determined by the constitution of the recipient rather than by any difference in the quality of the poison.—Lancet, May 21, 1870.

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Intussusception in an Infant cured by Inflation of the Bowel.—W. S., æt six months, admitted into Guy's Hospital March 28th, 1870. The child appeared in perfect health until yesterday afternoon about four o'clock, when, whilst sucking a crust of bread, he suddenly screamed out, fainted, and became cold. The mother took him to a doctor, who gave him a powder, which made him very sick. He continued in great pain, and cried incessantly. At three o'clock this morning he passed a quantity of clotted blood per rectum, and this continued to run from him until he was admitted into the hospital at twelve o'clock. The last fecal evacuation took place at noon the previous day.

On admission, the child was seen to be well grown, but face pale, and had a generally collapsed appearance. On examining his abdomen, a lump was distinctly felt to the left and above the umbilicus, which hardened when pressed upon. On passing the finger up the rectum a round projection could be felt about four inches up, with a circular orifice in the centre. The finger, when withdrawn, was covered with blood. The case being thus clearly one of intussusception, Dr. Wilks ordered inflation of the bowel by means of a bellows. Chloroform was given, and an enema tube passed into the rectum, the other end being attached to the bellows. The attempt to inflate was at first unsuccessful, owing to the large size of the rectum; but by increasing the width of the tube by wrapping a strip of lint round it, the colon was well inflated, and then the lump gradually went back until it quite disappeared. A drop of opium was ordered in a drachm of dill-water, and the breast to be given sparingly.

On the following day, March 29th, no lump could be felt. The child had been sick several times, and nothing had passed per rectum. To repeat the medicine.

March 30th, child very irritable; apparently much tenderness over abdomen, especially towards the right side. Occasionally sick. Passed a little blood, but no feces.

31st, evidently better. Had a liquid evacuation with no blood, and sucks well.

April 1st, passed a natural motion, and altogether better.

2d, child apparently well, and taken out by the mother, who was somewhat discontented at the operation performed on him, as she never could be made to realize the severity of the case.

He remained well until the 10th, when he was brought to the hospital, having had fresh bleeding. and the lump could again be felt. The mother would not allow the child to be again taken in for the purpose of a renewal of the method which had been before so successful, but took him away for the purpose of procuring some physic for him; and no more was heard of the case.

Dr. Wilks remarked that this was a good model case of intussusceptio and of the appropriate treatment. The nature of the involution was of the usual kind—the ileum into the cæcum, and the subject a boy, as is most commonly the case. There was, however, one symptom which had not been hitherto remarked, viz., the collapse at the time of the occurrence of the passing in of the bowel. The sickness and constipation denoted intestinal obstruction, and the passage of blood, that this was caused by intussusceptio. This symptom was first clearly established as a characteristic sign of this accident, by Mr. Gorham, who wrote an excellent article on the subject in the Guy's Hospital Reports for the year 1838. If there had been any doubt as to the nature of the case, this would have been removed by the discovery of a tumour in the abdomen, which contracted on being handled, and by the fact of the rosebud-like projection to be felt in the rectum. This showed that the intussusceptio was very extensive. The treatment was then clear, and, in other cases, was completely successful. Dr. Wilks's wish was to keep the child in for some time, continue the opium, and feed him most sparingly. It was also discussed whether a pad over the abdomen might be efficacious in preventing a return of the intussusceptio.—Lancet, May 21, 1870.

Clinical Remarks on the Diagnosis of Diseases of the Stomach and Œsophagus.—An emaciated man, æt. 53, was admitted into Guy's Hospital, under the care of Dr. Wilks, May 11th, with supposed disease of the stomach. The following were the chief points in the history of the case: for eight months past severe pains over the stomach, and almost immediate return of swallowed food, particularly of meat and dry solid matter; profuse hæmatemesis on two occasions; loss of flesh. Dr. Wilks stated that in cases of this kind it was necessary for the medical attendant to find out for himself whether there was immediate regurgitation of the food after deglutition, or vomiting occurring sooner or later after this act, but still not until the passage of the food into the stomach. The former symptom would indicate some contraction of the œsophagus; the latter, disease of the stomach, probably cancer or gastric ulcer. Hemorrhage from the stomach varied very much in amount, according to the nature of the case; in cases of gastric ulcer it might be slight or severe; but when due to liver disease it was always excessive, since the bleeding must necessarily be associated with extreme engorgement of the portal system. Pain in the epigastrium was invariably present in cases of vomiting, even with sea-sickness. Severe fixed pain was not a constant symptom of ulcer of the stomach; occasionally it was very slight, and not a source of complaint, whilst in other instances it was very acute. In the latter class of cases the peritoneal coat of the stomach was generally involved in the ulceration, and had probably become adherent to some neighbouring part. In one case, related by Dr.

Habershon, twigs of the pneumogastric nerve were found involved in the margin of the ulcer. Dr. Wilks was inclined to look upon the present case as one of disease of the œsophagus, since the food was either regurgitated immediately after deglutition, or, when retained for a short time before its return, was distinctly felt by the patient himself in a fixed position at the lower end of the gullet. Small fragments of toast or dry bread could be passed into the stomach with difficulty, but the bolus when mixed with tea or some other fluid was immediately returned. Dr. Wilks did not look with any favour on the plan of passing bougies for the treatment of disease of the œsophagus from morbid deposit. The contraction of this tube from this cause is not of inflammatory origin, nor analogous in any way to a stricture of the urethra. and cannot be treated with success by a process of stretching.—Lancet, June 4, 1870.

HOSPITAL NOTES AND GLEANINGS.

Clinical Notes from the Practice of Dr. Wilks, of Guy's Hospital. *Intermittent Tetany.*—J. T. R., æt. 3, was admitted March 23, 1870. He had always had good health except during the time of the occurrence of infantile disorders. On March 17th, whilst having his face washed, he complained of pain in his feet, and asked to have his boots taken off. As soon as this was done, his feet were found to be contracted. He was brought to the hospital in the afternoon, when three grains of gray powder were ordered. The spasm gradually passed off, and he continued better until the following Monday, when his legs were again suddenly contracted. The spasm evidently caused him a good deal of pain, as he screamed loudly; it lasted about ten minutes, and then subsided, but his feet did not regain their natural position afterwards. The spasms occurred several times during this day, and became less severe on the next. This morning the child had a severe spasm, in which the hands were also affected; the fingers remained extended afterwards. On admission, both legs were affected, the feet being drawn into the same position as in talipes varus, the calf of the leg being very hard; the knees were flexed, and the thighs on the abdomen. The muscles of the arm were less affected, the fingers being extended and brought together in a conical form. The child was constantly calling out from the pain caused by the cramp, and was continually moving from side to side in the bed in order to procure relief. The legs were rubbed, but with no apparent benefit, and so cold water bandages were applied; these evidently afforded ease, as he immediately became tranquillized. He was also ordered ten grains of hydrate of chloral three times a day. On the following day, March 24th, the spasms were not so severe, and had only occurred in paroxysms three or four times in the twenty-four hours. On the 25th, the spasms were gradually passing off. No effect was produced by pressing on the femoral artery. On the 27th, there were no spasms, but the feet remained contracted. After this, the spasms gradually wore off. and he left the hospital.

Clinical Remarks by Dr. Wilks.—Dr. Wilks remarked that such cases were more common than was supposed, but had hitherto received less consideration than they deserved, on account of the absence of a distinct appellation by which to know them. But when such terms as idiopathic musclar spasm had made way for a definite name as intermittent tetany, a fresh interest was thrown over the disease. Such a name, given by Trousseau, was quite justifiable when the same group of symptoms were constantly seen to occur in different individuals. The disease is mostly met with in children, and might be passed over as one of convulsions; but the recurrence of the symptoms and those characterized by tonic spasms, show the disease is a peculiar one. A child may be ill a few days and then recover; or the complaint may continue for a much longer period, and the whole body be affected, as in tetanus, whilst in others the limbs may be alone involved. The legs are drawn up towards the body, and the muscles are rigid, as in cramp; the arms may also be affected in the same way. If most of the cases were of this description, and like that of the boy in the present instance, the term tetanus might be objected to, seeing that in the tetanic state, excepting during the violence of the paroxysms, the spasmodic rigidity is confined to the neck, chest, and abdomen, those parts, in fact, which are more especially employed in respiration, whilst the limbs remain flaccid; there is in this an important distinction between the effects of tetanus and those of strychnia. In the present case, the spasms were confined to the limbs. The disease has always been regarded as a functional one, both on account of the remission of the symptoms and its non-fatal character. It might also be remarked how the fingers are extended and held stiffly together, just as is seen in hysteria, and it also sometimes happens that there is some amount of anæsthesia. As regards the cause of the disease, since teething, worms, etc. are sufficient to produce convulsions, so it has been conjectured that like causes may be present to produce intermittent tetany. This boy was a remarkably fine and muscular lad, and no cause whatever could be thought of sufficient to produce the malady. As the boy was suffering much agony, chloral was suggested, and this he took for some time; but, in order to afford immediate relief, some cold bandages were wrapped round the limbs. These were suggested by the remembrance of their great service in the cramps of cholera. As the disease under discussion subsides spontaneously, and as in this very case the paroxysms had already, on more than one occasion, rapidly abated, little can be said of the merits of the remedies employed.—British Med. Journ., June, 1870.

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Ague treated by Bromide of Potassium in Guy's Hospital.—It is known that bromide of potassium was first introduced into medical practice, as a remedy for enlargement of the spleen, by Dr. Williams. Reference to the cases which are given in full in his Practice of Medicine does not, however, show any relation of the remedy to ague-poison more especially than other causes of enlarged spleen. It was a spleen-remedy, and not an ague-remedy, that it was found useful. During the last four months, trials have been made at Guy's Hospital, among the out-patients, of the use of bromide of potassium in ague. The results are such as to show that this drug possesses a very remarkable power over ague, and a power that promises to be of important use in many of the more obstinate cases. Dr. Moxon has had several instances of its successful use; and two of these were in persons who had taken quinia for a length of time without benefit. The following is a short note of one of these cases:—

J. P., aged 27, a joiner, had been laid up for two months with tertian ague. It presented this peculiarity, that at the first onset it continued its course for a fortnight, and since that time had alternated weekly; so that he shivered every third day in one week, and was free from shivering the next, and so on—a week of ague following a week of rest. His spleen was three inches below the false ribs in the mammary line. He had the look of ague, but had not lost much flesh. He took quinia nearly from the first constantly, but did not get any better. He came to Guy's Hospital as an out-patient under Dr. Moxon on January 10th, and then commenced taking scruple doses of the bromide of potassium thrice daily. On the 17th, he said he had had no shaking the previous week, though it was the week when he ought to have shaken; but he had had some headache. The dose was increased to half a drachm three times a day. He never had a fit after taking the bromide; and on the 24th of January his spleen had gone up, so that it was only one inch below the ribs. He remained under treatment until February 28th. On presenting himself then, he said that he had had no more ague-fits; he felt bodily stronger and better than when he first came, and his spleen was scarcely to be detected by the fingers. The so-called "bromism" had not been produced in him. His fauces and conjunctivæ were sensitive as those of other people.

The other patient had applied on the same day as this man, and had given a very similar account of herself; *i. e.*, ague for many weeks, and continual use of quinia without benefit. The bromide was prescribed; and, after attending once and reporting benefit, she ceased her attendance on the following week.

The following case shows still more strikingly the usefulness of the remedy:—

J. S., aged 19, a gardener, from Streatham, came under Dr. Rees's care with tertian ague on June 13th, 1869. He stated that he had had paroxysms of ague every third day, between four and five in the afternoon, for the last two months; and had taken quinia during the whole of that time, but had derived no benefit or relief of any kind therefrom, and consequently sought relief at this institution. On admission, he had the general appearance of a healthy lad, but complained of tenderness in both hypochondriac regions. There was extended dulness over the liver, and also over the spleen. On the following day, he was ordered two grains of quinia in infusion of gentian three times a day. On the 14th, he had another paroxysm. On the 20th, the dulness over the liver and spleen was more extended; and on the 27th it was noted that no benefit had arisen from the quinia. He was accordingly ordered twenty grains of bromide of potassium in infusion of gentian three times a day. On June 30th, he was noted to have been free from attacks since the 27th, and felt better. On July the 3d, the splenic dulness was diminished, and he felt well. On July 7th, he was discharged well. During this patient's stay in hospital, he had taken eighty-four grains of quinine without benefit; but, after the first drachm of bromide of potassium, he pronounced himself materially relieved.

A considerable number of other more recent cases have been treated in the same way; and this has been the general result—that the bromide always checks the ague, so that for one or two weeks the patients have no seizures; that in some of the cases the cure is permanent, even while the patients still continue to reside in the place where they took the ague; but that in many cases when the patient is still in the ague-district, the ague-fits return after one or two weeks of free interval.

Thus it appears that the bromide of potassium is a remedy well worth a trial in cases of ague that do not yield to quinia, or in cases where the patient has left the place where he was seized with the poison; but it is not pretended that, for the general cure of ague, it would compete in advantages with quinia. Dr. Moxon took the suggestion of its use from Mr. Walter Buchanan, a student of Guy's Hospital, to whom all credit for the notion is due. It certainly appears that a new and important service of the bromide is here shown; and it is interesting to compare this result with the power which iodine and iodide of potassium have shown in curing ague, as reported in Virchow's *Archiv*, xlix.—Ibid.

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Neuralgia of Supraorbital Nerve; Division of Nerve; Recovery.—The following case of this was treated at the Royal Infirmary, Edinburgh. W. D, æt. 40, healthy, had suffered from tic in the jaw for five years. The pain during that time, although not constant, had occurred in paroxysms almost daily, and was usually very severe. Commencing at the supraorbital foramen, the pain passed downwards over the right cheek and upwards to the forehead; and for some months past it had been of a most excruciating lancinating character. He had been treated by many of the most skilful practitioners with almost every conceivable remedy for the affection, both internal and external, including quinia, iodide of potassium, mercury in large and small doses; purgatives of all sorts, such as croton oil; liniments of every description; chloroform, blisters, opium in all shapes, endermically and hypodermically; aconite, iron, bebeeru, etc., but all without relief.

Upon examination, the teeth were found all sound. The pain was daily intense, and lately had become so agonizing that the general health was beginning to suffer. As the patient was willing to submit to any measure likely to procure relief, the following operation was performed.

Dr. Joseph Bell made a T-shaped incision over the supraorbital foramen, and exposed the nerve. A portion of this, about the third of an inch in length, was excised. On coming out from the effects of the chloroform, the patient stated that the neuralgic pain had disappeared; and from this time till the present it has never returned. He was discharged from the hospital about a week afterwards, perfectly well, and without having experienced the slightest twinge from the pain from which he had been suffering for so many years.

In connection with this case, Dr. Joseph Bell remarked that in his experience the above result, with a few exceptions, generally followed division of the nerve in this affection; the recovery, however, being only temporary. The patient, he says, usually remains perfectly free from suffering for three or four months, after which time the pain gradually returns, and the operation has again to be performed, with a like result.—British Med. Journ., May 21, 1870.

Neuralgia of Dental Nerve, treated with Chloral; Relief.—Royal Infirmary, Edinburgh. J. F., æt. 65, had, for the last six months, been suffering from neuralgia of the dental nerve of the right side. The pain was intense, occurring in paroxysms almost hourly, and shooting downwards in a lancinating manner throughout the entire course of the dental nerve. For the relief of this, nearly all the teeth of that side had been removed; and all the ordinary remedies, both internal and external, had been employed without effect. On admission, he was suffering the most intense agony, and he was emaciated and careworn from constant suffering. Hypodermic injections of bimeconate of morphia and atropia, with bebeeru, quinia and iron internally were administered without any beneficial effect. It was determined to give the hydrate of chloral a trial. Forty grains were taken in the morning. In the course of ten minutes, the pain began sensibly to diminish, then gradually continued to decrease in severity, and in ten minutes more altogether disappeared. During this time he had not the slightest desire to sleep. The patient remained in perfect comfort for about half an hour, at the end of which time the neuralgia again gradually returned. Another dose of the medicine produced the same relief, which, however, never lasted more than about half an hour. This experiment was frequently repeated, and always with similar results; but it was remarked that in the course of a week the chloral, even although the dose was greatly increased, seemed to lose this anodyne effect, and did not relieve pain without causing sleep. As a commentary upon this case it may be stated that, after all the ordinary remedies failed to remove this distressing symptom, chloral produced temporary relief. The remarkable feature, however, is that chloral, contrary to the general opinion of its action, seemed to produce in this instance a true anodyne effect, viz., the relief of pain without causing sleep. That this was not altogether a coincidence was shown by the repeated observations made upon the case, the administration of the drug always being followed by temporary cessation of pain. Lastly, it would appear that here chloral lost its effect upon the system; as, to produce in this man beneficial results, the dose had to be gradually increased; and, finally, although he took so much as seventy grains, no anodyne action followed.—Ibid.

MEDICAL NEWS.

DOMESTIC INTELLIGENCE.

Reduction by Manipulation, of Dislocated Hip-Joint. By Willis Alston, M. D., of North Carolina, formerly resident student in the Baltimore Infirmary.—J. C. D., æt. 33, was admitted into the Baltimore Infirmary on the 25th November, 1868; a man of fine muscular development. On the 23d of November, after taking several drinks of liquor, he was riding in a buggy alongside of two other persons. His condition, together with the unfavourable position which he occupied, soon caused him to lose his equilibrium, and, falling from the vehicle, he dislocated the head of the right femur. He was thence taken home, and three physicians were summoned, who, after long and repeated attempts at reduction (under chloroform), failed to accomplish it. A certificate to that effect was sent with the patient. When admitted to the house the dislocated limb presented a shortening of two inches, with the toes resting on the opposite instep; the knee turned inwards, and somewhat advanced upon the other; the trochanter not so prominent as the one of the opposite side, and approaching the spine of the ilium. The head of the bone could not be felt in its new position on account of the muscularity of the patient. On the 28th of November, five days after the infliction of the injury, the patient was brought before the class for examination. Prof. N. R. Smith, after a careful examination in the presence of the class, and many other eminent medical gentlemen, found the limb considerably swollen and very painful, with much discoloration, and pronounced it a dislocation of the head of the femur, upwards, on the dorsum of the ilium. He spoke of the various methods which had been adopted for the reduction of that dislocation, but he preferred the one by manipulation, in which no apparatus was used. The patient was thoroughly chloroformed, to the almost perfect relaxation of his whole muscular system. Prof. Smith, standing upon the patient's right, who was placed on a convenient table, seized the ankle of the right leg with his right hand, and the knee with his left, with the aid of assistants, he forcibly flexed the thigh upon the pelvis, and the leg upon the thigh, leaving the knee then in the vicinity of the left shoulder; then, firmly holding the foot in this inverted position, the knee was pushed as far to the right as possible—everted; then aversion of the foot, followed by complete extension of the limb (using the length of the limb as a lever), finished the mechanism of the reduction, which was so complete, and so skilfully accomplished that, with a snap audible over the entire amphitheatre, the head of the bone slipped into the acetabulum. The patient suffered for some hours afterwards, with severe pain, and next day the thigh swelled considerably. However, with only a liniment to the part, the patient did well, and, in a few days, left the house in a good condition.

LITTLETON, N. C., July 1, 1869.

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Case of Fracture of the Thigh caused during Delivery. By COMEGYS PAUL, M.D.—On the 12th of April last an infant, three days old, was brought to my office, suffering from what the nurse called "something the matter with its leg."

It appears that the mother had been attended during confinement by a woman in the neighbourhood, following the combined occupations of "midwife and layer-out of the dead." Whether she endeavoured to make two cases out of this one I am unable to say; however, she told me that it was a "crossed birth," and that she was compelled to use forcible means in order to save the mother's life, not at all expecting the infant to be born alive.

Upon examination I found the limb much swollen, marked deformity of thigh, and the child appearing very restless and uneasy, with slight fever. Could distinctly feel the fractured part at the junction of the middle and upper third, and observed a very perceptible mobility of the fragments. The length of the injured limb measured from the inside was 6½ inches, the sound one was 7 inches.

I applied a pasteboard splint, reaching from the trochanter major to the external malleolus, fastened by adhesive strips and a bandage. The only difficulty experienced was to keep the dressing dry, the constant discharge of urine and feces tending to an irritable chafing of the parts. This was remedied by frequent cleansing and the copious use of oxide of zinc. At the end of the second week the splint was removed, and perfect union the result. Upon measurement both the limbs proved to be of the same length, the internal malleoli corresponding exactly, although there was slight antero-posterior flexion of the united bone.

Saw the case one month afterwards, and the deformity was not perceptible.

PHILADELPHIA, 1521 PINE STREET.

Commencing Carbuncle arrested by the Application of Nitrate of Silver. By B. F. Mebane, M. D., of Mebanesville, N. C.—I was called to see Mrs. E. W., who was suffering with the most excruciating burning pain from a large carbuncle on the inner portion of the thigh. It was very hard, of a blood-red colour, and about two inches in diameter. I moistened the inflamed surface with water, then took a stick of arg. nit. snd applied it freely to the indurated and inflamed part. The patient complained for ten minutes very much of the burning from the application, and in fifteen minutes after the first application was entirely free from pain, and required no farther treatment. The relief was perfect.

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Abnormal Condition of the Umbilical Cord, Diminution in the Size of the Vessels, and Defective Nutrition of the Child. By A. ED: WILLIAMS, M. D., of Springboro, Crawford County, Pa.—Mrs. W., aged 21, primipara, had suffered during some months of gestation, with intermittent fever, attended with occasional attacks of the most distressing cephalalgia. The disease seemed unusually obstinate, notwithstanding the free and continued use of quinia. A chill occurred only a week prior to labour, which took place June 10th, and this was probably a few weeks before full time.

The head presented, and labour was in all respects satisfactory. The child, however, was very small, weak, and shrivelled, and vigorous efforts were necessary to establish respiration. The cord was double the ordinary size, very white and translucent, and of almost cartilaginous hardness, so much so that it was found necessary to dress it in the erect position. No fluid whatever exuded from the cut extremities, and the vessels were scarcely to be seen at all, so diminutive was their size. The placenta was apparently quite normal. The child was with difficulty kept breathing, and lived but 20 hours.

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Deaths from Chloroform.—In the "Boston Herald" (quoted in the May No. of the "American Journal of Dental Science") will be found the notes of a case of death from chloroform, administered for the extraction of twelve teeth. The patient, Mrs. Bradford Toote, of Sheffield, had partly recovered consciousness after the operation when she suddenly seemed to choke, and died in a few moments in the dentist's office, at Great Bonnington, Mass.

In the mortality reports of deaths in the city of Boston, for the week ending April 9th, is one of a man, aged 65, who died "during inhalation of chloroform at Deer Island."—Bost. Med. and Surg. Journ., April 14, 1870.

FOREIGN INTELLIGENCE.

Physiological Action of Carbonic Acid.—At his last lecture, Dr. Richardson took for his subject some new and curious points relating to the physiological action of carbonic acid. After briefly describing the chief physiological facts ascertained since the discovery of carbonic acid as a product of the respiratory process by the illustrious Black, the lecturer proceeded to illustrate the effect of carbonic acid on animal and vegetable fluids. He said that his friend, the eminent chemist, Dr. F. Versmann, in studying the manufacture of some medicinal waters, had found, much to his annoyance, that when carbonic acid, with a little soda. was brought into contact under pressure with some vegetable infusions, the gas was fixed to a large extent, and the infusion was quickly transformed into a thick glairy fluid. Some infusion of orange and gentian treated in this manner was shown; the liquid was beautifully transparent, but glairy and thick, and, when transferred from one vessel to another, it turned out in a mass like albumen. The observation suggested to Dr. Richardson the importance of experimental inquiry as to the influence of carbonic acid on animal fluids, on the mucous secretions of the air-passages, on albumen, on serum, on solution of muscle, on fibrine, on blood, on blood-corpuscles, on bile, milk, and other animal secretions. He now showed some of his results, especially those relating to the precipitation of colloids. Albumen was shown as precipitated from serum, fibrine from a solution of muscular fibrine, and fibrine from solution in blood. Next it was demonstrated that the blood-corpuscles by exerting a condensing effect on the acid, prevented it by their presence from precipitating the colloids; and lastly, it was demonstrated that freshly-drawn defibrinated blood, subjected to carbonic acid under pressure, while it was rendered very dark by the process, on being exposed to the air at 60° Fahr., gave up the acid and seized oxygen in place of it with such avidity that a surface of blood a foot square was changed almost instantaneously from deep-black into bright-red arterial blood. Thus, the lecturer reasoned, carbonic acid on the blood side of the pulmonary vesicular surface is as important a necessity for respiration as is oxygen on the air side. Such are a few of the simple but interesting points of this lecture, of which we need say no more now, since in due course it will appear in our columns in full.—Med. Times and Gazette, May 21, 1870.

Subcutaneous Division of the Neck of the Thigh-Bone within the Capsular Ligament.—Mr. Wm. Adams exhibited to the Medical Society of London a man upon whom he had successfully performed the operation of subcutaneous division of the neck of the thigh-bone within the capsular ligament, for extreme deformity, with bony anchylosis of the hip-joint. The man, L. B., was twenty-four years of age, and the contraction of the hip-joint took place after an attack of rheumatic fever, seven years ago last June. That the case was one of bony anchylosis was proved by the failure of forcible extension under chloroform, when considerable force was used on three successive occasions.

On the 1st Dec. 1869, Mr. Adams divided the neck of the thigh-bone subcutaneously within the capsular ligament, using a long tenotomy knife and a narrow subcutaneous saw with 1^1 inch cutting edge. After the section of the bone, it was necessary to divide the tendon of the long head of the rectus and of the adductor longus muscles, and to cut through the tensor vaginæ femoris muscle before the leg could be brought into a straight line, and the limb was then bandaged to a long straight splint as a retentive apparatus. The details of the operation were described, and the instruments exhibited to the soicety. The operation was performed at the Great Northern Hospital. No swelling, redness, or deep suppuration followed the operation, but the wound was slow in healing.

On the 7th December, the house-surgeon, Mr. Willis, reports: "The dressing removed for the first time to-day. A few drops of pus only escaped from the superficial wound. There is no deep suppuration going on. The superficial wound dressed with carbolic lotion, one part in forty."

Mr. Willis further reports:—

"Dec. 13. The splint was removed altogether to-day. He can draw the leg up almost as well as the sound one, and has very fair motion of the hip-joint.

"Dec. 22d. Going on well. No febrile symptoms or deep suppuration going on. The superficial wound nearly healed. There never has been more than two or three drops of pus on the lint in the morning. Collodion and castor oil applied to-day instead of carbolic-acid lotion. He got up to day for the first time, just three weeks since the operation."

For a fortnight from this date Mr. Adams allowed and encouraged free motion; but, finding that this could not be maintained, and that the limb decidedly began to stiffen, Mr. Adams determined to abandon all idea of obtaining motion, and endeavoured to procure bony anchylosis with the limb in a straight position. The man was ordered to keep to his bed, and the limb to be maintained in a straight position by an extending weight of three pounds suspended over the end of the bed. After being kept in this position for three weeks, the divided neck of the femur seemed to be firmly anchylosed; and on the 24th of January, 1870, he was discharged and transferred to the Royal Orthopædic Hospital, where he still remains. From this date to the present time the recumbent position has generally been maintained with an extending weight, but daily exercise has been permitted, according to the inclination of the patient, two crutches being used at first, and one or two sticks afterwards substituted for them. At the present time he does not require more than one stick, and walks about a good deal every day. He can walk across the ward without a stick or any assistance whatever, but has not sufficient confidence in the limb to do more than this.

He exhibited his power in walking about the room without his stick, and Mr. Adams promised to record the progress of the case when the society reassembled in October next. The success up to the present time seemed to be complete, and there appeared to be every prospect of the man recovering a sound and useful limb.—Lancet, May 28, 1870.

Paralysis of the Bladder.—Dr. Van Holsbeck has employed with success electricity in paralysis of the bladder. He introduces an instrument into the bladder, and another into the rectum, connects them with the poles of an ordinary machine, and allows the continuous current to pass for a quarter of an hour. In seven sittings he has cured paralysis which resisted all other remedies.—Med. Press and Circular, May 11, 1870.

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Treatment of Eczema.—Dr. Kent Spender, of Bath, has found blackwash useful as an application in eczema rubrum of the legs, mixed with a tenth part by measure of glycerine. Linen rags are soaked in this and laid on the parts, and kept in situ by a bandage, but no oiled silk used. He renews the dressings twice daily, wetting them with warm water before removal. He has recently almost always been successful in such cases by this plan.—Med. Press and Circular, April 13, 1870.

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Mercurial Suppositories in Constitutional Syphilis.—Professor Lebert states (*Berlin. klin. Wochenschrift*, April 4) that he has of late had such success in the employment of these that he is desirous of calling attention to their value. They are formed by mixing mercurial ointment with butter of cocoa and white wax so as to obtain a convenient consistence.—Med. Times and Gaz., May 21, 1870.

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New Instrument for the Operation of Fistula in Ano.—In a recent case of operation, at the Royal Free Hospital, for fistula in ano, instead of the usual plan of introducing the bistoury through the fistula and bringing it down through the sphincter, Mr. Weeden Cooke used a scissors constructed for him by Messrs. Weiss. The finger having been introduced into the rectum as a guide Mr. Cooke passed one blade of the scissors into the fistula up to its extreme point, and then the other blade into the rectum. The two blades were then connected by a small screw, and by one rapid scissors action the sphincter was divided.

As the position required for this operation renders it unadvisable to give chloroform, and as the patient, unless very carefully held by assistants, often shrinks so as greatly to embarrass the surgeon, any plan which insures rapidity is advantageous, and it is with this view that the mode of operation described has been suggested. It was thought that it caused less pain than the bistoury.—Lancet, June 4, 1870.

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The Antiseptic System in Surgery.—At a recent meeting of the Medical Society of Berlin, the leading surgeons of that city recorded their experience of the carbolic acid treatment of wounds and injuries. Professor Bardeleben stated that, in two hundred and forty-one cases then in hospital, the success of this treatment was fully confirmed. Fifty of these were serious cases; and three of them were compound fractures, which, but for Lister's method, must have been amputated. He had found very good results and less irritation from the use of sulpho-carbolate of zinc, as employed by Mr. Wood of King's College Hospital. Professor Langenbeck stated that, although at first he had the greatest distrust of Lister's method, yet two years' experience of it has now so convinced him of its utility, that hardly any operation was now performed in his clinic without the use of carbolic acid. He also had recently two compound fractures of the leg, which, according to still prevailing doctrines, should have been amputated, but had both run a favourable course under the carbolic acid treatment. Professor Lister, commenting on this discussion in the current number of the "Edinburgh Medical Journal," observes that the "poisonous action" with which M. Bardeleben has met in one of ten cases has not occurred at all in his own practice since lac-plaster was substituted for the paste. The local irritation complained of he ascribes to the omission of the use of a "protective" to guard the wound from the direct action of the acid.—British Med. Journ., May 28, 1870.

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Results of Operations with and without Chloroform.—Professor Simonin, of Nantes, read a paper at the meeting of Delegates of Learned Societies, recently held in Paris, detailing the results of his thirty-four years of practice in the same hospital with respect to the great operations, distinguishing those performed prior to, and those subsequent to, the introduction of chloroform. The operations were 250 in number. Of these the results in amputation and hernia are as follows: Amputation of the thigh without anæsthetics 7, with 4 deaths, or 57 per cent.; with anæsthetics 23, and 8 deaths, or 35 per cent. Amputations of the leg 11, and 5 deaths, without anæsthetics, or 45 per cent.; and 14, with 3 deaths, or 21 per cent., with them. Strangulated hernia, 25 operations and 9 deaths (36 per cent) without, and 10 operations with one death, or 10 per cent., with anæsthetics.—Medical Times and Gazette, May 14, 1870.

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Anæsthetic Mixture.—M. Sauer, a surgeon-dentist of Berlin, after having performed various comparative experiments with anæsthetic substances, has come to the conclusion that the very best is a mixture of protoxide of nitrogen, chloroform, and atmospheric air. He considers this compound to be free from the dangers attendant on the use of either chloroform or the protoxide alone. The proportions which he advocates and employs are the following: liquid chloroform, six grammes; atmospheric air, three-quarters of a litre; and protoxide of nitrogen, sixteen litres.—Lancet, May 21, 1870.

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Death from Chloroform.—A case of this occurred at University College Hospital, May 3d last. The subject of it was a man, æt. 42, suffering from stricture and stone in the bladder. Clover's apparatus was used, containing thirty minims of chloroform in each thousand cubic inches of air. In five or six minutes the patient was insensible, and began to breath stertorously. As the sound was being introduced the man's pulse suddenly became extinct, and the face blue and pale as in epilepsy. Sylvester's method of artificial respiration was put in force for twenty minutes, and galvanism was applied over the heart; but the man did not revive. The heart was found to be loaded with fat, and, under the microscope, a large quantity of interstitial fat was seen.—Brit. Med. Journ., May 14, 1870.

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Suppression of Pain after Operations.—At the last meeting of the Imperial Academy, M. Sedillot submitted a note on "The Suppression of Pain after Operations." He observed that a patient may undergo an operation in a state of absolute insensibility, but a state of suffering awaits his arousing from this condition, which it should be our object to avert. Opiates, refrigerants, chloral, etc., have been tried with this object without attaining it. The various kinds of cauterization render traumatic surfaces insensible and exempt from accidents. The actual cautery effects this, but the rapidity with which it cools, and the superficial character of its action, much restricts its employment. M. Nélaton tried the gas cautery, but the eschars this produces are too superficial, and the same may be said of those induced by a flame of oxygen and hydrogen experimented on by M. Sédillot. Of all measures of this kind the electric cautery, as perfected by the late Prof. Middledorpff, of Breslau, is the best and most certain. The degree of heat can be instantly varied as desired, rendered intermittent or continuous, and directed into the deepest cavities, or employed for the division of every description of tissues. To prevent loss of blood, it must be employed at a white heat, taking care to divide or destroy the tissues with extreme slowness. In this way M. Sédillot has performed numerous operations without loss of blood, and with great success. Burns, he observes, of the third degree cause but little pain; and he has seen persons mortally burnt preserving for several days their appetite and sleep and hopes of cure. This absence of suffering in the severest burns is explained by the destruction of the nerves. And in the same way the electric cautery renders the wound it causes insensible, so that persons operated upon by its agency under chloroform experience on awakening no suffering. Later, at a period varying from the third to the ninth day, an inflammatory reaction is set up, but it is generally very slight, fever either being entirely wanting or soon ceasing.—Medical Times and Gazette, May 14, 1870.

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Chloral an Antidote of Strychnia.—In a communication to the last issue of the "Pharmaceutical Journal," Mr. Groves, of Weymouth, narrates his experience on this important subject. He says: "A large spaniel picked up some bread-and-butter that had been prepared with Battle's killer for the destruction of mice, and ate an uncertain quantity of it. The first intimation I had was the dog's being seized with violent tetanic spasms. I at once attempted to administer an emetic of tartarized antimony, but succeeded in getting her to swallow not more than three grains, which had no immediate effect. At 3 30, the dog apparently dying, it occurred to me to try chloral. A solution was prepared of one drachm of the hydrate in one ounce of water, and of this a teaspoonful was administered every few minutes when an opportunity presented itself. Doubtless not less than a third part was wasted, as the least excitment brought on a violent spasm. The odour of chloroform was soon apparent in the dog's breath, and a manifest improvement was simultaneously observed in the less rigid condition of the body generally. After half an hour her state had so much improved that I considered her cured. Such, however, was not the case, for the spasms soon after returned, but with mitigated severity. I therefore administered half a drachm more of the hydrate in the same manner as before, and with the same results. Two hours after the first dose of chloral all symptoms of tetanus had disappeared, the dog appearing a little drowsy and fatigued, but not sufficiently so to cause sleep. Notwithstanding that not less than one drachm of pure hydrate of chloral had been taken, she did not show the slightest tendency to coma. As soon as she was well enough to run about the emetic took effect, relieving her stomach of a considerable quantity of half digested food. At 12 P.M. her pups were allowed to suckle, and, strange to say, no injurious results to them followed."—Med. Press and Circular, May 18, 1870.

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Manganese in Blood and Milk.—A memoir has just been read at the Royal Academy of Sciences of Italy, by Professor Polucci, announcing a great discovery. It is the constant presence of manganese in the human blood. In more than twenty analyses of the blood of persons of different sexes, professions, health, and temperaments, there was always found a certain proportion of manganese.

One of the consequences of this fact is that the metal ought to be also found in milk. Submitted to experiment this deduction is entirely confirmed. In thirty-four analyses of milk, twenty-three of which were human, four from the cow, and four from the goat, the presence of manganese was constantly observed.—Med. Press and Circular, May 18, 1870.

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Smallpox; Vaccination.—Smallpox has prevailed extensively in Paris lately, and there being a great scarcity of the Jennerian virus, recourse was had to heifers for the virus. The result has been most unsatisfactory, and animal vaccination has fallen into entire discredit there. Dr. Baudry, in an article in *L'Union Médicale*, 29th March, 1870, calls attention to the fact that the Jennerian virus did not originate in the cow but in the horse, and that the disease was communicated from the latter to the former animal, and, after passing through its system, was used by Jenner as a protection against smallpox. He strongly urges the propriety of seeking in the horse for the virus, and after causing it to pass through the system of the cow it should then be transferred to the human system. This would undoubtedly furnish us with the true Jennerian virus. The virus obtained from the vesicles of a cow, inoculated with smallpox, is probably altogether a different virus.

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Smallpox in Paris.—The rule laid down by M. Besnier (see preceding No., p. 94) that smallpox always prevails most extensively in winter, and that it abates in the spring, and still more in summer, has not been verified. On the contrary, during the spring and summer the disease has increased during the latter periods in Paris. In this city the mortality from the disease during the week ending May 21st was 195, and during the following week ending May 28th was 215. All the quarters of Paris have been more or less severely visited; but those which have undergone the most cruel ravages are the 10th, 11th, 12th, 17th, 18th, 19th, and 20th arrondissements, namely, the more densely and poorly populated districts. The disease does not confine its attacks to the poorer classes, however; the wealthier circles of the Parisian population have paid a large tribute to the mortality; and among those who are now suffering from the malady I may just mention the names of the Duke de Caumont-Laforce, and of Prince de la Tour d'Auvergne, former ambassador to London. A few days ago one of the children of Prince Napoleon was hurried away to Mentone, as he presented symptoms which threatened an attack of the disease.

—

Liebig on Fermentation.—An important paper by Baron Liebig was laid before the Bavarian Academy of Sciences a short time ago, and is to be found in the January number of the "Annalen der Chemie und Pharmacie." According to commonly received doctrines fermentation is a vital act, the transformation of grape sugar into alcohol and carbonic acid being a part of the development of the yeast plant. Though commonly ascribed to Pasteur, who is its most prominent supporter, this theory is, in reality, an old one, having been enunciated with the utmost distinctness before Pasteur's time. In opposition to it Liebig brings forward the following formidable objection: The yeast plant consists in a great part of highly nitrogenized material, containing, moreover, sulphur and an appreciable amount of phosphates. Now, the yeast plant will bring about fermentation even in a pure solution of sugar. The yeast plant cannot grow when it is not supplied with nitrogenous matter and phosphates; therefore the transformation of sugar into alcohol and carbonic acid cannot be a part of the growth of the plant, and must be due to something else.

In order to exhibit the utter inadequacy of amount of growth of the yeast plant to admit of fermentation being looked upon as a part of that development, Liebig quotes one of Pasteur's experiments. 9899 milligrammes of sugar were fully decomposed by the action of a very little yeast, and after the termination of the fermentation the quantity of yeast plant was weighed, and found to be 152 milligrammes. Of these 152 milligrammes less than 30 milligrammes consisted of cellulose. Liebig asks, are we to regard the assimilation of this 30 milligrammes of cellulose as the reason of the conversion of 9869 milligrammes of sugar into carbonic acid and alcohol?

Yeast is capable of causing a breaking-up of malate of lime into carbonic acid, carbonate, acetate, and succinate of lime. A number of other chemical transformations are also affected by the action of yeast upon various organic substances.

Liebig's theory of fermentation is that it is a purely chemical or physico-chemical process. The breaking up of sugar into carbonic acid and alcohol he places side by side with the decomposition of anhydrous acetic acid into acetone and carbonic acid (a change brought about by heat), and with the change of an aqueous solution of cyanogen gas into oxamide, which is brought about by the action of the merest trace of aldehyde.

Just as the vibration produced by the aldehyde determines the rearrangement of the atoms of cyanogen and water so as to constitute oxamide, so Liebig regards the rearrangement of the atoms of sugar as the result of a vibration produced by the chemical changes which take place in some unstable substance produced by the yeast plant. The growth of the yeast plant is, according to this idea, only remotely connected with the process of fermentation. We quote the following passage from Liebig's paper :—

"It is possible that the physiological process stands in no other relation to the process of fermentation than that, by means of it, a substance is formed in the living cell, which, by an action peculiar to it—resembling that of emulsin on salicin or amygdalin—determines the decomposition of sugar and other organic atoms. In such a case the physiological action would be necessary for the production of this substance, but would be otherwise unconnected with the fermentation properly so called."

In harmony with this view, Liebig finds that the "washings" of yeast (which contain no yeast plant) have the property of instantly converting cane-sugar into grape sugar. And, holding to his theory, he anticipates that other very alterable complex substances, besides products of the yeast plant, will be found to possess the property of setting up that vibration which rearranges grape-sugar into alcohol and carbonic acid, and which we call the process of alcoholic fermentation.

In a footnote Liebig calls the attention of chemists to Schunck's observations on the peculiar ferment occurring in madder, and which seems to possess the property in question.—Med Times and Gaz., Feb. 26, 1870.

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Chemistry of Entire Wheat Flour.—A great deal has been stated of late relative to the importance, in a dietetic point of view, of consuming the entire wheat grain, in place of that which is now commonly used. The reason given, as is well known, is that the branny parts of the grain contain the earthy salts, which go to form bone in particular, and the cerealin, or peculiar body which changes starchy matter into dextrine Whilst we have, on more than one occasion, commended the use of entire wheat flour, and condemned that of mere starchy compounds, especially in the case of the young, we have counselled the subtlest pulverization of the branny portion of the grain, so that its irritant qualities may be destroyed, and appealed to the chemist for a more complete analysis of the entire wheat flour, and particularly of the latter after it has undergone the ordinary process of cooking or roasting, so as to determine the changes undergone through the agency of the cerealin, and in the cerealin itself. Professor Attfield has just made a careful analysis of Chapman and Co.'s wheat flour, and supplied us with the information we needed. He finds that this flour, *au naturel*, contains 15.2 per cent. of moisture, 14.1 of glúten, 1.62 of phosphates, and 1.91 of cerealin. By the application of heat, as in gentle roasting, a portion of the natural moisture escapes, and the starch is in part changed. The amount of moisture is 10.8 per cent., of the gluten 15, of phosphates 1.65, and cerealin 1.2, in the roasted flour, which, in fact, is richer in flesh-and bone-forming substance than before. Moreover—and this is a most important fact—six-tenths of the cerealin remains in the soluble state, to act as the digestor of starchy foods taken into the stomach with it. It was especially as regards the state of the cerealin in cooked flour that we needed information. The fine ground flour of the entire wheat grain is proved, therefore, to be altogether the most desirable for general consumption, and we hope it will take the place of the purely starchy compounds now in use, both in the case of children and of adults.—Lancet, April 2, 1870.

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Injections of Liqueur de Villate in Carious Bone—M Nélaton employs (Union Méd., May 31) the following modification of the above liquid as an injection to be thrown into the fistulous tracts connected with carious bone: Acetic acid 100, sulphate of copper and sulphate of zinc of each 10, and acetate of lead 5 parts. There is a considerable precipitate, so that the solution requires shaking before employing it.—Med. Times and Gaz., June 11, 1870.

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OBITUARY RECORD.—Died, at Leeds, June 1st, 1870, aged 61, after a short illness, THOMAS NUNNELEY, F.R.S., one of the most eminent provincial surgeons of England, and the leading surgeon, occulist, and medical jurist of Leeds.

At Paris, May 27th, 1870, Dr. JOSEPH ALEXANDER AUZIAS-TURENNE, aged 59.

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CLINICS.

CLINICAL LECTURE.

Clinical Lecture on two cases of Pneumonia, complicated by Nephritis. By HANDFIELD JONES, M. D., Physician to St. Mary's Hospital.

W. S., æt. twenty-four years, a painter, had had a cough for three years or more. Three weeks before admission he was taken with shivering, pain in the chest, and dyspnœa, with increase of cough. Since then he had become much worse, with increase of the latter two symptoms. The date of the actual commencement of pneumonia in this case appeared uncertain. Usually it is reckoned from the rigor; but as this had occurred three weeks before his admission, it is hardly probable that the lung inflammation, which was still extending on admission, had existed all this time. The site of the pneumonia, and its limited extent at first, as well as the subsequent spread, indicate its recent origin. Thus, on the first day, there were found at the lower part of the right lung posteriorly bronchial breathing, bronchophony, and dulness on percussion; higher up the breathing was good, but it was weak universally in the left lung. On the following day the lips were parched, the tongue furred, the sputa scanty and rusty, and the physical signs indicated that the hepatization had extended nearly to the spine of the scapula, while at the left base the vesicular murmur was to some extent replaced by small crepitation.

On the fourth day the hepatization was lessening in the right lung. On the fifth moist râle was heard at the base. On the sixth the bronchial breathing had disappeared. On the seventh the temperature was falling, as was the pulse; but on the eighth both were still febrile (pulse 105, and temperature 100.4°), and the same on the ninth day. On the eighth both lungs were free, with the exception of some crepitations

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at the right base. On the tenth the pulse and temperature were normal, and the disease may be said to have come to an end. This summary shows positively that the inflammatory exudation was in great measure reabsorbed before the pyrexia ceased.

An important complication observed on the third day was nephritis in a well-marked form, evidenced by the deep-coloured, smoky appearance of the urine, which deposited a considerable amount of brownish sediment, consisting of red globules, brownish pigment, granular pigmentary casts, larger non-granular fibrinous casts, and a slight amount of albumen. Indeed, it presented precisely the same characters as in cases of nephritis after scarlatina; but there was no history of any such recent affection, and though the point was not specially investigated, it seemed to Dr. Handfield Jones very unlikely that, had the patient suffered from this malady, he would not have mentioned it. On the first day nothing was given but a saline diuretic; the intention being to see how the disease would act if left pretty well alone. The next day six leeches were obliged to be put on to relieve the pain in the right side and back. Ipecacuanha and opium were given freely. The third day his pain was relieved, but his respiration was more frequent, and the state of the urine, as well as his general condition, made it clear that tonic medication was urgently needed. The solution of muriate of iron was administered pretty freely, and it seems not doubtful that it acted very beneficially. It told, however, much more on the local changes than on the general pyrexia. In seventy-two hours after it was first taken, the left lung, which had been in some measure involved, was quite free, and the right was clearing up rapidly, bronchial breathing having ceased, and crepitatio redux being heard all over the back; also the urine had become nearly natural; but the temperature and the pulse were still high—103.4° and 116 respectively. The intention with which the iron was administered was to sustain the flagging force of the heart's action, and to contract the dilated arterioles and capillaries in the inflamed lung and kidneys, and so diminish the hyperæmia which supplied the exudation. These objects it accomplished very well, but it seemed at the same time to render the expectoration more difficult, especially at the upper right front, where special uneasiness was felt. The salutary effect of the drug in such cases as this is closely paralleled by its action in erysipelas. The diet was generous, and six ounces of brandy were ordered at the same time as the perchloride of iron.

The second case is that of H. M., aged twenty-five, a baker. He was taken ill at 3 A. M. of the day of admission, after working all night. He was habitually much exposed to alternations of heat and cold. His first symptom was pain in the left side of a sharp character. Shivering came on at 8 A. M., while he was out, and lasted an hour and a half. On admission in the forenoon his temperature was 103°; his pulse some hours later 117, large and soft. Eight leeches were applied to the seat of pain. On auscultation Dr. Handfield Jones found no positive evidence of morbid action; the breathing was fairly good throughout the right lung, at the left posterior base it was weak and imperfect, but at the seat of pain only some roughening of the breath-sound could be heard. The expectoration was markedly blood-tinged. A linseed poultice was applied to the left side, and a draught, consisting of ipecacuanha, opium, and nitrous ether in acetate of ammonia solution, was ordered. On the following day the pulse was 135, excited and rather tense; the temperature 104°; the urine dark-coloured, with a dark sediment consisting of renal particles, and short, wide, distinctly pigmental casts of a specific gravity of 1013, and not albuminous, or only very slightly so. The addition of five grains of nitrate of potash to the draught was ordered, and four ounces of brandy. On the third day there was only slight pain on cough, and the expectoration was muco-watery, and but little stained; the pulse 126, weak; the temperature 104 8°. The urine was of very dark colour, and highly albuminous; the air entered into the right lung tolerably well posteriorly, and on the left side it entered very feebly and imperfectly, only some obscure râle being audible. Twenty minims of the muriate of iron solution every three hours were now ordered. From that time the pulse improved, and on the second day the temperature began to decline, while the urine gradually resumed its normal characters; but the cough became hard and remained troublesome. Four days after the administration of the iron the pulse was 70 and weak; the temperature 97.9°; the left side was free from pain; the urine quite clear, and light coloured; and the patient slept well. The next day the urine was free from albumen, and the resonance and breathing good on both sides posteriorly, though the expiration was rather prolonged at the right base. He continued to make a good recovery and shortly left the hospital. With regard to the albuminuria he affirmed that he had not been in the way of scarlet fever; he certainly on admission presented no traces of sore-throat or of eruption.

This man's illness extended over about six days, reckoning from its commencement to the time when defervescence was complete. The temperature was declining two days before it reached its lowest point; subsequently it rose a little. The lung affection was more marked by general signs than by physical, but there is no doubt that pleuritis of the left side existed, as well as considerable congestion of that lung, though actual hepatization does not seem to have occurred. The renal inflammation seems to have set in together with the pulmonary, and both terminated nearly at the same time. It seems most probable that they had a common cause. How far the earlier part of the treatment was beneficial is not clear. It is noteworthy that consolidation of the lung did not occur, and that the pyrexial period was of short duration. In any case, Dr. Jones believed it was a prudent preliminary to the administration of iron, which in the form of the ammonio-chloride was certainly to all appearance of much service, just as it so frequently is in cases of scarlatinal dropsy.—Lancet, July 2, 1870.

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Clinical Lecture on Cases of Successful Treatment of Uterine Catarrh by Internal Application of Carbolic Acid. By W. Playfair, M. D., Physician to King's College Hospital.

In a large proportion of old standing cases of uterine catarrh it is hopeless to expect a permanent cure by any means which do not act directly on the seat of the disease, which is the lining membrane of the cavity of the uterus and cervical canal beyond the external os; accompanied, of course, with secondary morbid states of the body of the uterus and cervix, such as hypertrophy, congestion, &c. Rest, applications to the exterior of the cervix, and general treatment will unquestionably cause a temporary improvement, but on a recurrence to the old habits of life all the old symptoms return. There are serious objections to intra-uterine injections, unless the os is first dilated with laminaria tents, as they are apt to bring on severe uterine colics. By means of fine probes of whalebone or flexible metal, round which a thin film of fine cotton-wool is wrapped, alterative applications can readily be made to the interior of the uterus, without pain or danger. In the very numerous cases in which this plan of treatment has been carried out, in no single instance has anything but the greatest benefit accrued. It is no doubt advisable to select the cases judiciously, and where there is much uterine tenderness, intra-uterine treatment should be postponed until this has been diminished by rest, leeching, &c.; but with proper precautions the treatment is perfectly safe. A concentrated solution of carbolic acid, eighty parts to twenty of water, is used; and it acts so well that for a long time nothing else has been employed. After the first application the discharge is sometimes increased, but after the second or third it is generally greatly diminished, and a single application is often sufficient to cure superficial erosions of the cervix. As a rule, there is no difficulty in passing the probes, as in true uterine catarrh the os is invariably patulous. As the case improves the patulous state of the os diminishes, and this is found to be one of the most certain signs of improvement.

The following cases are selected, not because they present any peculiar features, but because each of them had been assiduously treated for lengthened periods by the ordinary methods employed, and without permanent relief, while they were rapidly cured as soon as the true seat of disease was attacked.

Mrs. P., aged thirty-three, was the mother of four children, the youngest of whom was six years of age. Ever since the birth of her last child she had suffered from uterine diseases, the prominent symptoms being constant bearing-down pain which entirely incapacitated her for work, and a very profuse leucorrhœal discharge of a transparent gelatinous character. The latter was steadily increasing, and she became now thin and cachectic. The menstrual flow was irregular, scanty and very painful. The uterus was large and tender on pressure; the cervix greatly hypertrophied, and covered with a villous erosion, which bled on being touched. The leucorrhœal discharge was seen to issue freely from the os uteri. During six months the patient had attended the out-patient department of a metropolitan hospital, and during two months she had been treated generally, with occasional applications of tincture of iodine to the cervix. Her general health improved somewhat, but the uterine symptoms did not become much better, while the discharge continued unabated. She was then treated by the intra-uterine application of carbolic acid once a week, along with the application of iodized cotton and glycerine to the cervix. After the third application the discharge was much diminished, and the erosion of the cervix almost healed. In four months the patient was perfectly well; the uterus being of normal size, and the uterine leucorrhœa having entirely disappeared. She has since remained perfectly well in every respect.

M., aged twenty-six, domestic servant, had suffered from uterine disease for four years, with constant pain, and the discharge was so profuse that it ran freely from her, and incapacitated her for work. She had, on two occasions, been an in-door patient in a metropolitan hospital for several months, gaining only temporary relief. On examination the uterus was seen to be large and heavy, the cervix greatly eroded, and the os patulous, admitting the sound with ease. A glairy discharge was pouring out abundantly. After the fifth intra-uterine application of carbolic acid, the discharge, which had continued unabated for four years, almost entirely ceased. There remained neither pain nor bearing down. The patient was able to walk a good distance, and carry weights without inconvenience, for the first time since the onset of her illness. She had gained in flesh and general health.

Mrs. K., aged twenty six, the mother of four children, had suffered greatly for three years from uterine disease, and had undergone a variety of treatment, including repeated leeching of uterus, and the application of potassa fusa to the cervix, without any permanent relief. She was entirely unable to walk, in consequence of bearing down pain and profuse leucorrhœal discharge. The menstrual flow was irregular and scanty. On examination, the uterus and cervix were both greatly hypertrophied. The latter was softened, and covered with granular erosion, which bled on being touched. Much glairy discharge exuded from the os. The uterus was anteverted, and the cervix exposed with difficulty. A band of adhesion was felt in the direction of the right broad ligament—probably the remains of an old attack of parametritis. There was, however, no swelling or tenderness on pressure in that situation.

The carbolic-acid treatment was then commenced, and from the very patulous condition of the os the probes could be passed with great ease. An immediate improvement commenced. In two months the uterus and cervix were much diminished in size, the discharge lessened, and the patient was able to walk about with ease, and to attend to her duties. In six months she was perfectly well, and the probes could no longer be passed through the os, which had resumed its natural dimensions.—Lancet, July 2, 1870.

HOSPITAL NOTES AND GLEANINGS.

Aneurism of Innominate Artery successfully treated by Ice and Rest.—On May 26, we had the pleasure of attending Mr. Coote's visit to certain of his wards, and as some of the cases were of unusual interest it may be well to give brief notes of these. The case which most attracted our attention was one of innominate aneurism in Henry VIII. ward. The patient, a man aged about 35, was admitted on November 9th, 1869, having noticed some swelling in the right side of the root of the neck for three weeks only. He could not attribute it to any blow or strain, nor had he been out of health, but the swelling once noticed increased so rapidly that when he came into the hospital the man was nearly suffocated by it and suffered from excessive pain about the right shoulder and behind the ears. The tumour itself was reported at this time to be the size of a large orange, very prominent, thin-walled, and with violent pulsation, so that it felt as if on the point of bursting. The man was at once put to bed and kept at perfect rest. A blister was applied over the swelling and afterwards it was painted with iodine, but without any notable effect.

Early in December a bladder of ice was applied over the aneurism, and this treatment has been constantly kept up since—except during the night, when the melting and replenishing of the ice disturbed the man's sleep too much. For a long while perfect rest was maintained, but free meat diet was permitted from the first, and the aneurism made marvellous progress towards recovery. He could not raise his hand on admission, but he now pulls himself up in bed easily with the right hand. There is no obvious prominence, and although one still detects a considerably extended area of impulse, yet this is quite quiet, and the manipulation gives no pain. The radial pulsation at the wrist is small, but quite perceptible, and when asked how he feels the man describes himself as "Fine. Eats hearty, sleeps well, and no pain." The ice-bladder is still worn, although the diet just now is somewhat modified on account of an attack of orchitis which has declared itself during the past few days.—Med. Times and Gaz., June 11, 1870.

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Treatment of Various Cases by Irrigation, at St. Mary's Hospital.—Mr. Haynes Walton has during the last two years, been treating various cases admitted under his charge by the old-fashioned method of irrigation. The cases were the result of various kinds of accidents, and consisted of compound fractures, lacerated wounds, amputations, etc.; but all coincided in this respect, that sloughing and very extensive suppuration were to be expected in all. Irrigation is described and strongly recommended in all works on the principles of surgery; but, owing to the great difficulty of rigging up, at a short notice, any apparatus that will be thoroughly effective, and yet not cause the patient discomfort by wetting the bed, it is not nearly so much used in hospital practice as it ought to be. The apparatus spoken of in most books, while perfectly efficient as to the manner in which the water is to be kept dropping on the affected limb, does not provide for the complete conveyance away of the fluid after it has done its duty and passed over the limb. It is to this that Mr. Walton has directed his attention and an apparatus may now be seen in use at St. Mary's Hospital, which answers the purpose perfectly. For this perfected apparatus, Mr. Walton is indebted to his friend Mr. Greenway, of Plymouth, who has done so much to improve surgical appliances. For description here, it is enough to say that the limb is swung from a cradle on a sort of a tray, which collects the water as it drips on the limb from above, and discharges it by a waste pipe into a vessel which can be placed under the bed. A macintosh placed under the tray prevents all chance of the bed being wet. The following good results have been attained by irrigation. Water, by constantly passing over suppurating wounds, carries away all offensive discharges, and no smell or accumulation of pus occurs. The freedom from smell and the rapid removal of foul discharge cannot but be beneficial to the patient. The elevated temperature of the inflamed part is lowered, and this is not only grateful to the patient, but, by preventing congestion, inflammation, and the consequent strangulation of the parts, prevents also the destructive cellulitis which usually follows injuries as those to be described. A direct saving is accomplished by the fact that no poultices are needed; one piece of lint to cover the wound being all the dressing required daily. To the water may be added a weak solution of carbolic acid; but this is often dispensed with.—Brit. Med. Journ., June 18, 1870.

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Disinfectant Treatment of Operation Wounds.—Two or three cases of amputation of the thigh called for some comment upon the "disinfectant treatment of operation wounds." Mr. Coote stated that he was firmly opposed to the germ theory of disease, and cared little for putrefaction in wounds. His invariable method of dressing the wound after amputation is to insert two or three metallic sutures, support the flaps by broad straps between these, apply dry lint over the wound and bandage the stump up. It is left in this state for four or five days, and then, on removing the dressings, there is usually some putrefaction somewhere; but the greater part of the flaps are often already firmly united, and there is seldom much trouble afterwards. Thread ligatures Mr. Coote considers "the most harmless little things in the world."—Med. Times and Gaz., June 11, 1870.

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Hysterical Malingering.—The two following cases, treated in the Kent and Canterbury Hospital, illustrate some points in connection with this. In one of them, the patient, then a girl, was, twenty years ago, the subject of wide-spread popular interest, on account of her supposed existence without food. Her imposture was, however, detected; and she ultimately gave up fasting, and is now quite fat. In illustration of the sequel of these cases, we may add that, although it is believed that the girl never had any organic disease whatever, she still keeps her bed; and that from long disuse, her joints have become contracted. For the following further account of the case and of the mode in which the cure was accomplished we are indebted to Mr. Andrews, of Canterbury, under whose care the patient now is.

"When I came to Canterbury in 1850, I found the girl among the parish cases, with 'scrofula' entered as the malady from which she was suffering. She was lying with her knees drawn up, so as to have ample room in a child's cot for her length. She had a running of watery matter from under one or both knees, as if the skin had chafed at the contact of the thigh and leg. I could see nothing else the matter with her. She was always moaning or making a peevish noise when I went, and had her head muffled up in some finery and frills to her cap, so as to hide nearly all her face. Her mother always said she never ate nor drank anything, and had not done so for over twelve months. She would suck fruit, her mother said, and spit out all the pulp; and that was all the nourishment she would own to her taking. She said she never had an evacuation from the bowels, and but very seldom from the bladder, and then in very small quantity. I simply did not believe her, and looked on it as a morbid state of mind requiring sympathy. The mother being, in my mind, the impostor, I used to see the girl regularly, and gradually got her to chat and leave off some of her finery, by bantering her. She has learnt to play chess, and is a very fair player. She does a great deal of embroidery, crochet, and tatting work; and is quite a woman of the world, although bedridden from her legs being cramped up so long. In her first illness, she was attended by one of the hospital surgeons, and perhaps made rather too much of. She can now eat or drink anything; is a good-looking woman; suffers from indigestion occasionally, with headache and constipation; but has good health generally, and is stout and strong."

The second case was one in which a girl who kept her bed presented symptoms of vesical irritation, and voided a great number of fleshy masses, coated with blood and calcareous deposit. Subsequently, she began to pass portions of stone, which were identified as flint. It was also ascertained that the fleshy substances consisted of portions of the sound of a fish. The girl was at the time confined to her bed, and was under the care of a physician. This case occurred in 1854. We were informed that the girl subsequently recovered and desisted from her attempts at deception; but that she recently died of cancer of the bladder.—Brit. Med. Journ., June 18, 1870.

MEDICAL NEWS.

DOMESTIC INTELLIGENCE.

Smallpox and the Protective Powers of Vaccination in the City of Providence.—Dr. Edwin M. Snow, the very intelligent and efficient superintendent of health of the city of Providence in a late report (1869) to the Board of Aldermen, states some facts of the most conclusive character as regards this subject, and which are of the greatest interest at the present time.

He states "the experience of the last six months affords a remarkable illustration of the effects of preventive measures in this disease, and also furnishes a complete refutation of the idea, often promulgated by those ignorant of the subject, that vaccination had lost its protective power against smallpox.

"Within the last six months, ending with this date, the smallpox has appeared in this city at four different times, and in four different localities."

As to the protective power of vaccination, he says "we often see statements in the public papers, that vaccination has lost its protective power against smallpox, or that it has run out, implying that the vaccine virus has lost, either in kind or in degree, some of the properties that it possessed when first discovered. On account of an unusual prevalence of smallpox, during the last fall and winter, in California, as well as in Chicago, St. Louis, and other of our midland cities, these statements in the newspapers have been more frequent than usual. It is probable that there are many persons in the community who are inclined to believe them, or, at least, to think that there is some foundation for them. And yet there is not one particle of truth in them. The character and properties of vaccine virus are as perfect, and its protective power against smallpox is as certain and effectual, in Providence, to-day, as it was when discovered by Jenner.

"*The proof of this* is seen, *first*, in the character and effects of the vaccine virus itself; and *second*, in the results of its application in the community."

He further adds: "In Providence during the past winter, smallpox has been stopped four different times, *by vaccination*. No one can believe that if there had been no protective power in vaccination, the disease could have been arrested under the circumstances in which it appeared. But there is more direct and positive proof than this, of the protective power of vaccination at the present time.

"During this present month of April, 1869, I have had a case of smallpox in a family where there were three persons wholly unprotected, and one other person with only partial protection. I vaccinated them all, and though they remained in the family, and went freely in and out of the room with the smallpox, until recovery, not one of them had the slightest symptoms of the disease. Was there any evidence of a weakened protective power of vaccination in that case? And yet, during this same time, an article appeared in one of our daily papers taking the ground that vaccination had lost its protective power against smallpox. But this is no exceptional case. I have had scores of similar cases during the last fourteen years.

"It may be assumed, positively, that the remarkable exemption from smallpox, enjoyed by this city during the last fourteen years, as already described, has been wholly owing to the protective power of vaccination.

"The following facts, from the experience of the past fourteen years, furnish additional evidence upon this subject:—

"During the fourteen years, nearly. July, 1855, to April, 1869, ten thousand four hundred and sixty-four (10,464) persons have been vaccinated in my office. Very many more, of course, have been vaccinated, in the same time, by other physicians in the city.

"During the same fourteen years, I have myself given certificates of vaccination to sixteen thousand three hundred and thirty-two (16,332) children to enter the public schools. Probably nine-tenths of these certificates were given by me, solely from the evidence furnished by the vaccination scar, and because I had full faith in the protection furnished by vaccination against the smallpox. Now note the result!

"During these same fourteen years I have known of nearly every case of smallpox in Providence, and have visited the greater portion of them myself, and I have never, during this time, seen or heard of a single case of smallpox in any scholar in the public schools, who had received a vaccination certificate. These facts certainly seem to prove that vaccination has not lost its protective power."

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Heifer Vaccination.—It is stated that Dr. Martin, of Boston, has obtained permission to import, free of duty, four heifers from France, for purposes of procuring virus for vaccination. This heifer virus, we have good reasons for believing, is entirely ineffectual as a protection from smallpox. The evidence that such is the case seems proved by the results of trial with it in Paris during the recent epidemic of smallpox, as stated in our previous No., p. 110. If the vaccine virus has been deteriorated, we must recur to the Jennerian virus, the source of which we noticed above.

In connection with this subject we may quote the following statement which shows how nearly one may come to a great discovery without having the discernment to know it or to apply their observations to a useful purpose:—

Mr. Rolph, in a letter to Dr. Beddoes (appendix to a translation of Gimbernat's new method of operating for femoral hernia), states: "With a view to secure a family where the natural smallpox was apprehended, he inoculated, among others, a man who never received the infection, though the operation was repeatedly performed with undiluted matter, and though he was for days exposed to contagion from living in the same room with a man who died of the disease.

"It is worthy of remark that this man had some years before a complaint incident to cows, and commonly called the cowpox; a malady more unpleasant than dangerous. It is generally received by contact in milking. In the *human species* the complaint is sometimes local; at other times absorption takes place, and the glands in the course of the absorbents become indurated and painful. When this is the case, I have learned from my own observation and the testimony of some old practitioners, that susceptibility to the smallpox is destroyed. Some advantage may in time be derived from this fact."

It seems amazing that Mr. Rolph did not turn these observations to a useful purpose, but leave it to Jenner to immortalize himself by so doing.

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Hydrate of Chloral in the Treatment of Cerebro-spinal meningitis.—Dr. A. Patton, of Vincennes, Ind., calls attention ("Indiana Journ. Med.," July, 1870) to the hydrate of chloral in cerebro-spinal meningitis, though the theoretical considerations which he adduces in favour of it may not be well founded, still, the practice may be efficacious. He says that he has employed the chloral in four well-marked cases of cerebro-spinal meningitis. This treatment "for the first four days in all the cases was hydrate of chloral in from ten to forty grain doses every two hours, dissolved in water or simple syrup. The uniform effect of the medicine in all the cases was to produce complete relaxation of the muscles, promptly relieving the tetanic contractions of the muscles of the back, etc. A quiet, refreshing sleep was substituted for the restlessness and delirium. The pain in the head and muscles was relieved as well as the nausea and vomiting. The hyperæsthesia of the surface gave place to a partial anæsthesia, and in all the cases the most formidable symptoms yielded in less than twenty-four hours. But in two of the cases an irritative fever was developed, which continued three and four weeks. All recovered without any unpleasant sequelæ, except the loss of an eye by one. The treatment for the secondary fever was aconite and iodide of potass. These were all little girls from six to fourteen years of age, and that three of them were saved by this remedy I feel certain. But whether or not the medicine will control this most formidable disease in strong vigorous men, is yet to be determined by future experiments."

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[*Excision of the Os Calcis.*—The following note was intended for insertion in the July number of the American Journal of the Medical Sciences, but being crowded out we give it a place here in order to afford Dr. Burrall the earliest opportunity to offer his desired explanation in regard to his paper on excision of the os calcis.—Ed.]

New York, April 17, 1870, 26 West 11th St.

Isaac Hays, M. D., *Dear Sir:* In a favourable review of my article on "excision of the os calcis" which was published in the "Bellevue and Charity Hospitals Reports," and noticed in the American Journal of the Medical Sciences for April, ult., the reviewer states in conclusion:—

"This paper (which has evidently been prepared with a good deal of care) would fill a gap in surgical literature had it not been *anticipated* by the very exhaustive memoir of M. Polaillon, which was published in the numbers of the Archives Générales de Médecine for September and October, 1869, and of which a brief abstract appeared in the quarterly summary of this Journal for January, 1870, pp. 264–266."

I write this by way of explanation, for my article was handed in for publication, as is known by Professor J. E. Taylor, several months previously to the appearance of M. Polaillon's excellent memoir, but owing to the unfortunate delay in the preparation of the reports, it has only recently been published.

Very respectfully yours,
F. A. Burrall, M. D.

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Analysis of Hair Tonics and Restoratives.—The following are the results obtained by Prof. C. F. Chandler, from the analyses of fifteen so-called hair tonics and restoratives.

	Grains of Lead in one fluidounce.
Clark's Distilled Restorative for the Hair, ...	0 11
Chevalier's Life for the Hair, .	1.02
Circassian Hair Rejuvenator, .	2.71
Ayer's Hair Vigor, . . .	2.89
Wood's Hair Restorative, . .	3.08
O'Brien's Hair Restorative of America, ...	3.28
Gray's Celebrated Hair Restorative, ...	3 39
Phalon's Vitalia, . . .	4.69
Ring's Vegetable Ambrosia, .	5.00
Mrs. S. A. Allen's World's Hair Restorer, ...	5 57
L. Knittels' Indian Hair Tonique, ...	6 29
Hall's Vegetable Sicilian Hair Renewer, ...	7.13
Tebbetts' Physiological Hair Regenerator, ...	7.44
Martha Washington Hair Restorative, ...	9 80
Singer's Hair Restorative, .	16.39

Obituary Record.—Died suddenly, in Paris, July 5th, Charles A. Pope, M. D., formerly Professor of Surgery in St. Louis Medical College. Dr. P. was devoted to his profession, and was one of the most skilful and esteemed surgeons of the Mississippi Valley, and generally beloved for his kindness of heart and great benevolence.

—— in Cincinnati, June 3d, Landon C. Rives, M. D., in the 80th year of his age. Dr. R. had some years since retired from practice, but he was for a long period one of the leading physicians of Cincinnati, and occupied a professorial chair.

FOREIGN INTELLIGENCE.

Entire loss of Speech; *the Sequence of Typhoid Fever.* By J. Waring-Curran — The following case is a very interesting one, and the loss of speech a very unusual consequence of typhoid fever.

J. C., a husbandman, was seized with typhoid fever, which ran the ordinary course. During his illness, three of his children, his brother-in-law, and his wife, became infected with the disease also. The children were the first to become ill. There was nothing unusual in the symptoms of any except the daughter, a fine intelligent girl, aged seven years, whom I had previously known, having had occasion to visit professionally at her father's house.

The fever commenced with her in the usual way. She expressed herself suffering from the ordinary symptoms; but on the seventh day of the fever her speech left her entirely. She lay like a statue, taking food and medicine when offered her, putting out her tongue when requested, and making signs when she required the urinary apparatus in the night chair—a striking contrast to the delirious condition of, and impatience evinced by, those in the same house suffering from the same disease. At one time she became perfectly unconscious, and remained in that state five days, opening her mouth for food as a young bird in a nest will, if I may be permitted to use ths *simile*, without any attempt of elevating the eyelids. The fever ran its usual course, and on the twenty-first day she had a favourable crisis. It is now three weeks since then; the girl is rapidly recovering her strength; possesses all her faculties; the sense of taste, hearing, feeling, and smell; but there is no sign of speech returning to her. When she desires to respond in the affirmative the mouth is widely opened; when in the negative the lips are contracted. She can smile, and is at times sorrowful; *but no human sound of any kind can escape her.* She is more mute than the most dumb patient I have ever seen. What a contrast! Six weeks ago the girl possessed all her faculties—was liberal of speech, and I believe, for I have myself heard her speak, expressed herself with a clear, a distinct, and unhesitating utterance. The poor child seems at times to feel acutely the heavy affliction which has befallen her.

Another medical gentleman has seen the girl with me on several occasions, and we are unable to account for this distressing complication. There is no paralysis, no symptoms of cerebral mischief, no wasting of any of the muscles, nothing unusual to be observed about the throat or tongue. The girl eats well, digests her food freely, and sleeps well. There is perfect power in all the limbs.

Everything has been done that science or art could suggest to restore the voice, but without success. Bored with the question "Shall she recover her speech?" we have hoped against hope, and we prevaricated with the expectation that as the girl grew stronger the power which she is deprived of would be returned her, but of this there is no sign, and I fear little hope of our best wishes being ever realized.

The case recorded demonstrates, however simple a disease typhoid fever may appear to be, how complicated it may become at times, how disastrous it may prove itself by causing afflictions like the present, which no art can modify, or method of treatment remedy.

P. S.—Since the foregoing was written (three weeks ago), for I intended before publishing the case to see what the lapse of a little time longer might effect, I regret to say, although my patient is in every respect well, her speech has not been restored to her; nor has she made *the least vocal sound.* A nurse well known to me, has been in constant attendance at the house for five weeks, and she would not deceive me. There are no symptoms of localized paralysis, nor other cerebral mischief of any kind.—Medical Press and Circular, June 22, 1870.

Crisis from Fever by Salivation.—Mr. J. Waring-Curran relates (Med. Press and Circular, June 22,) a very unusual case of this.

E. J. D., a fine healthy boy of eleven years of age, was seized with typhoid fever in common with six other members of the family. With the rest he battled most favourably against the fever until the day of crisis arrived, when the saliva began to trickle from his mouth. I paid little attention to the circumstances, knowing that he had not a particle of mercury throughout his illness. I gave him freely to drink of chlorate of potass water. In the course of a couple of days the symptoms became aggravated; the salivary glands were enormously swollen; the tongue protruded, and the saliva literally ran in a continuous stream from the angles of the mouth. Upon the fourth day after the symptoms commenced the teeth loosened, and he could not be restrained from removing them; left alone one afternoon, he extracted four teeth, and in the course of a few days several others. The head and face and neck at this stage were much swelled and œdematous. The boy could not move his lips, and it was with difficulty he could swallow; accordingly, we were forced to sustain him by nutritious enemata, of wine, beef-tea, and cream, with a little opium added. Although the interior of the mouth was mopped out several times a day abscesses soon formed, the stench from the discharge of which was intolerable, and the boy gradually got weaker—dying on the ninth day from the period of crisis taking place. The other members of the family recovered favourably, never once evincing a similar train of symptoms.

I saw the boy every day, and sometimes twice a day, throughout his illness, as there were six in the one house down at the same time, and one or two of them was always needing advice as is usual in such cases at such a time. Upon the morning of the twenty-first day of his fever, I found him going on favourably. He had slept a couple of hours, and the pulse appeared to have gone down in frequency, and the temperature of the body was lower; but having occasion to call in the evening the nurse directed my attention to the pillow case, being wet with the constant flow of saliva.

I never saw a better marked or a more severe example of salivation. There was an absence of the line on the gums indicative of mercurial salivation, but in every other respect the case resembled one of profuse salivation. It is very difficult to understand the cause of this form of crisis; that it was owing to reflex nervous agency there can be little doubt; but finding the youth collected, having had a couple of hours' refreshing sleep in the morning, and in the evening symptoms of salivation presenting, seems surprising. The teeth extracted were perfect and free from disease.

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Liniment in Fissure of Anus.—Dissolve one part of tannic acid in sixteen parts of glycerine. A piece of lint dipped in this solution should be introduced night and morning into the rectum. The bowels should be kept open. By means of this preparation M. Van Holsbek, its originator, has succeeded in healing anal fissures which have resisted the division of the sphincter. —L'Union Médicale.

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Morphia Collodion.—Mix together one part of hydrochlorate of morphia and thirty parts of flexible collodion. The collodion is applied by means of a camel's-hair brush to the seat of neuralgic pains. Should these occur periodically, larger or smaller doses of the sulphate or the valerianate of quinia are to be given besides.—Ibid.

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Traumatic Tetanus.—Dr. Poma relates a third apparently desperate case of traumatic tetanus occurring in a woman, aged 19, which he succeeding in curing by large doses of quinia and laudanum, aided by chloroform friction. In the seventeen days of treatment 34 grammes of quinia, 25 of laudanum, and 75 of chloroform were employed.—Med. Times and Gaz., June 25, from Gazette Med. Lombarda, June 4, 1870.

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Dr. Dupuy relates (*L'Union Médicale de la Gironde*) a case of popliteal aneurism cured by forced flexion. The subject of it was a physician.

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Account of Dr. Beauperthuy's Treatment of Leprosy. By R. H. Bakewell, M. D., of Trinidad.—In redemption of the promise made to the public, and in accordance with the convention between Dr. Brassac, Dr. Beauperthuy, and myself, I now proceed to publish the treatment employed by Dr. Beauperthuy for the cure of leprosy.

My state of health prevents me from drawing up any report at present of the cases in which I have tried the treatment, but I may state the results are so far perfectly satisfactory, that the tubercules are entirely removed, the sensibility and power of movement in paralyzed limbs are restored, and the general health improved. I have had four cases under treatment. The method of Dr. Beauperthuy consists of:

First. A nourishing and abundant diet; salt-fish or meat, and pork are prohibited entirely; so are spirits; light wine (Bordeaux) is allowed in moderation to those accustomed to it. Fresh meat should be given every day.

Second. The patients should live in as healthy a locality as possible, and not in the neighbourhood of marshes, etc. They are required to sleep under musquito nets so as to prevent the sting of insects, which irritate and inflame the skin, and perhaps propagate the disease. Not more than two persons are to occupy the same room; and it is better if each has a separate room.

Third. Internal remedies varying according to the condition of the patient are given. The principal one is bichloride of mercury or corrosive sublimate in doses of one-fifteenth of a grain twice a day. Dr. Beauperthuy has also lately been trying the effect of alkalies. He is still engaged in investigation on this part of the treatment, and this is the chief reason for not having made it public before. Quinia is given where fever occurs, and other remedies as occasion may require.

Fourth. To remove the tubercles and promote exudation, the oil of cashew-nut (huile d'acajou) obtained by the spontaneous evaporation of an alcoholic tincture of the nut, which must be well pounded in a stone or wooden mortar before being exposed to the action of the alcohol. This is a most valuable application, acting slowly, but very powerfully.

Fifth. A strong solution of nitrate of silver and copper, made by dissolving silver coin in strong nitric acid, and mixing the nitrate thus obtained with an equal bulk of distilled water.[1]

Sixth. Frictions night and morning over the whole of the body with cocoanut oil.

Seventh. A bath with soap and water, taken before the frictions.

The above are employed in all cases. Where the feet are much affected, as the more caustic applications are inconvenient, Dr. Beauperthuy has employed with great benefit, baths of hot cocoanut oil, heated to 100° Fahr. These must only be employed under the direct supervision of an intelligent assistant with the thermometer in his hand, as of course the patient's sensations cannot be trusted to.

The above are the main points in Dr. Beauperthuy's treatment. I have only to add that it is advisable to try the caustic applications over but a small surface at first, as their effect will naturally vary somewhat, according to the constitution of the patient; and that it requires great firmness to resist the entreaties of the patients, after they have seen the effect of the first application, to have them made more frequently, and over a larger surface than is prudent.—Medical Times and Gaz., May 21, 1870.

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Urine in Relapsing Fever.—Dr. MEYMOTT TIDY has published six analyses of urine from patients affected with relapsing fever in the late epidemic. The patients were treated in the London Hospital, and were typical cases of the fever. We are not aware of any one having previously investigated the urine in this disease, and therefore quote Dr. Tidy's results:—

No.	Temp.	Sp. gr.	Total solid pr. 1000 gr.	Chlorides pr. 1000 gr.	Uric acid pr. 1000 gr.	Urea pr. 1000 gr.
1	99°	1024	45.8	—	—	9.8
2	106	1024.2	42.7	6.48(?)	10.8	18.8
3	101	1021.2	33.1	3.12	1.11	10.6
4	108	1016.8	30.3	1.14	0.48	13.2
5	99	1023.	32.2	2.68	0.83	9.64
6	107.5	1008.6	12.1	1.00	0.68	12.8

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[1] This I have only employed to rouse the action of the skin where there had been anæsthesia for four or five years. The oil of cashew-nut is what I have principally used. The nitrate of silver is never applied to the face.—R. H. B., May 11, 1870.

In the cases where the temperature is very high (Nos. 2, 4, and 6), the amount of urea is very large, and the chlorides correspondingly small, with one exception, where the chlorides seem to be present in a most unusual quantity.

In those cases where the examination showed a lower temperature (Nos. 1, 3, and 5), the urea is diminished in quantity, and the chlorides are increased.

The amount of uric acid is very variable, possibly differing according to the peculiarities of each case.—Medical Press and Circular, June 29, 1870.

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Penetration of Capillaries by Pigment Cells.—The wanderings or migrations of the white corpuscles, described by Cohnheim and Von Recklinhausen, from the interior of the vessels into the surrounding tissues, are now very generally, though by no means universally, admitted. * * *

An important piece of corroborative evidence in favour of the migratory view has recently been supplied by Dr. Saviotti, of Turin. This observer being engaged in studying the inflammatory process in the web at the foot of the frog, first obtained a circumscribed spot of inflammation by means of a drop of collodion, and after a few days found the pigment cells of the irritated spot accumulated around the vessels in a contracted condition, and in the course of a short time that they had entirely disappeared. He immediately applied himself to the question of explaining the mode of their disappearance. In other frogs he excited inflammation by dropping on the web a small quantity of a 2 per cent. solution of sulphuric acid. Again, after a few days, he saw that the pigment cells had accumulated around the bloodvessels, and that, though they still preserved their contractility, their processes were less branched and numerous than natural. On further examination, he now observed that these processes began to penetrate the walls of the adjacent capillaries and small veins, causing an obstruction to the onward movement of the red corpuscles on their proximal side, while a clear space was observable on their distal side, occupied only by serum. And now one of two things occurred: either the process of the cell broke off, and was swept away by the blood current, or the whole cell gradually squeezed itself through the capillary wall (the part within the vessel becoming greatly attenuated and elongated) until it also was carried away. In the former case, the cell, shorn of part of its substance, still remained outside the vessel; in the latter, it of course disappeared entirely. As regards the time occupied in these phenomena, Dr. Saviotti finds that the cell processes penetrate the vessels in a period varying from three to six hours, and that it takes about the same length of time for the whole cell to follow and to be washed away from the internal surface, to which it long remains adherent.

These observations seem to us to be of very great importance, as throwing light on the phenomena of absorption. Hitherto, we believe, the entrance of solid substances from without into the bloodvessels has only been noticed by Von Recklinhausen, but these observations are of so precise a character, and so easily capable of being repeated, that we trust that they will stimulate other observers to further inquiry.—Lancet, May 28th, 1870.

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The Germ Theory.—The number of the Lancet for July 9th last contains the following startling article:—

"It has been the lot of Professor Tyndall, by his lecture on Dust and Disease, to excite or to quicken in the public mind an interest about a scientific problem of the deepest importance, but of such a nature that, until then, its very conditions were known only to the scientific. It has since been discussed, with more or less display of ignorance of these conditions, by a large proportion of the general press. Amid or beneath all this turmoil, and quite independently of it, the work of real investigation has been going on; and Dr. Charlton Bastian has put forth, in *Nature*, what is perhaps the most important contribution yet made towards the solution of the great question that really underlies all controversies about germs. That question is, to determine whether there is any line of demarcation between animate and inanimate matter—any essential difference between vital and merely physical properties—any such thing as life except as the sum of actions depending upon forces that are strictly correlative with motion, and that, like heat or light, are merely the expressions of the conversion of motion under given conditions. Dr. Bastian himself states the problem by comparing the commencement of a low organism to the commencement of a crystal;

and argues that we have no more reason to infer the pre-existence of a germ in one case than in the other. He details an elaborate series of experiments, seemingly performed with all due care, and showing, as far as they go, that low forms of life become developed in organic fluids without the presence of air, absolutely *in vacuo*, and in fluids that have been previously raised to temperatures that are universally admitted to be destructive to the vitality of all known germs. And not in organic fluids only, but in saline solutions, and in saline solutions containing no carbon, and in which that element has been replaced by silicon. Such results, when the experiments producing them have been properly repeated and tested by other observers, will go far to strike at the root of whole systems of thought that are at present cherished by large numbers of earnest people. And yet, as we have often had occasion to maintain, the doctrine of germs, and especially of the germinal origin of disease, almost requires the doctrine of spontaneous generation as its complement. A germinal theory may serve to explain the occasional rapid or extensive diffusion of epidemics; but it encounters overwhelming difficulties when called upon to explain their commencement. The facts of life point almost irresistibly to the conclusion that epidemic diseases may originate *de novo* from certain combinations of conditions; and it is hardly possible to believe that the germs of all past or present pestilences were coeval in their beginnings with the peopling of the earth by man; and yet, if not, and if these pestilences do indeed depend upon living and organic self-multiplying poisons, the doctrine of spontaneous generation would be at once established. The conditions which called such poisons into existence must be themselves capable of precise repetition; and the cause being present, the effect will surely follow. To our minds, this mode of considering the question gives to sanitary work a far higher aim, and a far more definite object, than it would otherwise possess; and points to the permanent maintenance of a high standard of physical or moral cleanliness as the only means of preserving a high standard of public health. We do not, of course, in any way pledge ourselves to the correctness of Dr. Bastian's conclusions; but we desire to call the attention of our readers to their importance, and to the original paper in which they may be found. Dr. Bastian has a work upon the subject in progress; and his papers in *Nature* may be regarded as pilot balloons, sent up to show him the directions in which his views will be criticized, and the nature of the attacks to which they will be subjected. We confess to a hope that they may hereafter be proved to be true. Their complete establishment would greatly simplify some of the most difficult problems by which life is beset; and would confer lasting fame upon an earnest and truth seeking worker."

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Condensotion of Combination of Carbon with Separation of Water, and their Importance in Plant Life.—Herr A. Kekulé, of Bonn, has discovered that common acetic aldehyde may pass over very easily, and even spontaneously, into crotonic aldehyde, which then yields the well-known crotonic acid. The transformation is easily understood by supposing that two molecules of the first aldehyde, by elimination of water are condensed into a single molecule, and this appears to be of very great importance in explaining the formation of substances richer in carbon, and more complicated, out of simpler ones. Herr Kekulé proposes to study and explain these processes more exactly; but in the mean time many speculations will arise out of them. Thus Herr Bäyer, of Berlin, has developed his views on plant-life and on fermentation. According to his explanation, sugar is not formed in plants, as has hitherto been supposed, by the splitting up of substances of complicated composition, but synthetically from carbonic acid and the products of their reduction, among which Herr Bäyer believes may be included methyl-aldehyde, discovered by Professor Hofmann. This aldehyde has the same composition as sugar, but a smaller molecular weight; and, by the union of several molecules of methyl-aldehyde, sugar might be produced. Herr Kekulé also believes this to be probable. In fermentation, Herr Bäyer thinks that, as a consequence of the internal movement which is a part of this process, an accumulation of oxygen takes place within the molecules of sugar, which results in its separation into alcohol and carbonic acid. The elimination and absorption of water in different ways, which the theory points out, appear to be processes of the greatest importance in the changes of carbon-combinations in plants.—Med. Times and Gaz., July 9, 1870.

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Influence of Athletic Sports on Health.—Dr. FARQUHARSON read a paper on this subject before the Medical Society of London. Exercise, he considered, was necessary, not only to preserve the balance between body and mind, but to promote the functions of life. It might, however, be potent either for good or evil; and damage was often done by persons of sedentary habits indulging, without due preparation, in such exertions. Dr. Richardson had, in the "Social Science Review," drawn attention to the dangers of volunteering in this relation. The nervous system had, even in repose, a heavy strain to bear; and if to this any sudden addition were made, the destructive processes were apt to exceed those of repair. The influence of the mind was, however, necessary for beneficial exercise; and athletics seemed best to supply this combination. The Germans, French, and Americans were behind us in this respect. Dr. Farquharson then showed that muscular degeneration was the result of excessive, as well as of deficient work. It was not likely that such results would follow our present system of sports; but there was reason to fear the danger of their being carried too far in our public schools, and thus checking mental progress, and dulling the clearness and sharpness of the brain. He next referred to the sports in detail. Rowing had been condemned by Mr. Skey and Dr. Richardson; but Dr. Farquharson endeavoured to show that, from the great care exercised in picking and training crews, boating was less dangerous than these eminent authorities supposed. Gymnastics must be cautiously used when the frame was consolidated. Our public school boys or university men required valuable moral as well as physical training. It was argued that if the education of girls was eventually to be assimilated to that of men, they must also graduate in manly sports. In the treatment of the insane active employment was most beneficial. An interesting letter from Dr. Langdon Down was read, showing the remarkable results which had obtained with idiots at Earlswood Asylum. As regarded the proper dose of exercise every one must be his own physician under ordinary circumstances; but Dr. Farquharson believed that he had seen cases of irritable heart improved by a moderate amount, and quoted a case by Dr. Stokes in which relief from violent cardiac dyspnœa was only obtained by running. While serving in the Coldstream Guards, he had met with several cases of dilated heart in recruits from over-exertion. He condemned running; cricket he considered harmless. As to football, Dr. Farquharson's experience had been derived from Rugby; and, although the game was apparently played there with great violence, an accurate list of the casualties during the past two years showed that it was comparatively harmless. One case of serious injury to the spine had occurred, and steps were taken to remove the apparently objectionable features of the game. It was not unreasonable to suppose that, although permanently serious results did not often follow that game of football in which the ball was carried by the player, necessitating falls on the head and injury to the spine, the sharpness and clearness of the mind must be blunted; and he quoted the opinion of an eminent educational authority to this effect.—Brit. Med. Journ., Jan. 15, 1870.

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Influence of the Sewing Machine on Health.—M. DECAISNE, who has paid much attention to this subject, presented a memoir to the Académie de Médecine on the Sewing Machine, which is summed up in these conclusions: 1. The effects on the muscular system differ in nowise from those of all excessive muscular exertion of certain of the limbs, to the exclusion of the others. They are not produced at all in women who work only two or three hours a day, and generally disappear after a while in those who work longer. 2. While admitting that all excessive labour in women is a powerful cause of disturbance of the digestive organs, the sewing machine cannot be accused of especially causing disorders which are met with in sixteen out of twenty women pursuing all varieties of calling in Paris. 3. Certain affections of the respiratory organs—as, for example, dyspnœa—are met with just as frequently in women employing the needle as the sewing machine. 4. The noise and trepidation of the instrument produce slight disorder of the nervous system at first, but the women soon become accustomed to them, and they then produce no injurious effect. 5. A careful inquiry has also convinced him that women employing the sewing machine are, *cæteris paribus*, not more liable than any other workwomen to metrorrhagia, abortion, leucorrhœa, or peritonitis, the facts which have been adduced in evidence being simple coincidences or the results of excessive labour. 6. Supposing even that some of the reproaches to the machine were well founded, they would be of no great importance in face of the constantly increasing employment of steam and other motor powers. 7. As regards those machines still set in motion by women, those with isochronous pedals are preferable to those with alternating pedals. 8. In fine, M. Decaisne is of opinion that the machine, when employed within reasonable limits, and without fatiguing the worker, as is too often done, is not attended with any more inconvenience for the health than working at the needle. In proof of this, he states that he has found it impossible to discover in twenty-eight women, from 18 to 40 years of age, and working from three to four hours a day, any ill effect whatever attributable to the machine.—Med. Times and Gaz., July 9, 1870.

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Smallpox in London.—It is stated (Lancet, July 9th, 1870) that this disease is on the increase all over London. More cases have been taken into the smallpox hospital in the last half year than in the whole of 1869. The respective numbers were 525 in the last half year, and 405 in 1869. This is ascribed to the neglect of vaccination.

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University of Edinburgh.—Dr. ALEXANDER SIMPSON has been elected to the chair of midwifery in this school, rendered vacant by the death of his uncle, Sir James Y. Simpson.

This election it would seem from our late English journals has given great dissatisfaction, the claims of his competitors, Dr. J. Matthews Duncan and Dr. Keiller, especially those of the former being considered much greater.

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Improved Method of Plugging or Stopping Teeth.—Mr. NAPIER read a paper on this subject before the Medical Society of London, and exhibited some specimens in which the cavities caused by decay were severally filled up with hippopotamus ivory, mother-of-pearl, and India-rubber, vulcanized to the consistence of ebony Mr. Napier desires to obviate the necessity for using metal in any form for stopping teeth, and read this paper with a view to prove the importance of the object he advocated. He argues that one of the principal causes of chronic inflammation in teeth that have been stopped according to the method now in general use, is that metal is a readier conductor of heat and cold than the natural substance of which a tooth is composed. The improvements he advocated would benefit both operator and patient.—Lancet, May 28th, 1870.

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Succedaneum of Quinia.—M. PAVIA, an Italian professor of chemistry, has isolated, from the leaves and roots of boxwood, an alkaloid which he calls bussine. This substance has been tried in the treatment of marsh fever by several physicans in Italy, and with success at the rate of 75 per cent., quinia generally 80 per cent. of cures. It should be mentioned that, in several cases, gastric uneasiness, pyrosis, thirst, sickness, giddiness, and tinnitus aurium were complained of.—Lancet, May 28th, 1870.

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OBITUARY RECORD.—Died, June 29th, aged 81 years, Sir James Clark, Bart. K. C. B., Physician in Ordinary to the Queen of England. For the last ten years he had retired from the active duties of his profession, but still continued to perform some of his court duties. Sir James was one of the Nestors of the profession, and enjoyed eminent esteem, which was fairly won by a career of great usefulness, by his entire freedom from selfishness and ambition, his love of justice, and his singularly simple and unassuming manners. His influence with the Queen was always exerted for the advantage of the profession and with acknowledged good judgment.

—In Edinburgh, June 29th, aged 71, JAMES SYME, Esq., F. R. S. E., &c., late Regius Professor of Clinical Surgery in the University of Edinburgh. Mr. S. held a first rank among British surgeons. He was a cool and most skilful operator, possessed great power in diagnosis, and his name is associated with some of the most remarkable operations on record.

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This is a superb edition of a work which is now classical and standard. It is unnecessary to say that it is pre-eminent among all works on the subject. Comprehensive as were the previous editions, the present one has been greatly enlarged, and with the judicious and valuable additions of the American editor, constitutes in itself a sufficient encyclopædia of surgical science and art. It has been remodelled and whole chapters rewritten. Many of the old wood-cuts have been withdrawn, and nearly a hundred new ones of greater value introduced.—*Chicago Medical Journal*, Oct. 1869.

We believe it to be generally admitted that no single work, either American or foreign, pertaining to the principles and practice of surgery, has been so universally received with favor as this of Professor Erichsen. For ourselves, we may be permitted to say, that for the last ten years we have been in the constant habit of referring to "Erichsen," when beset by doubts and difficulties in the management of our surgical cases; and owing to the completeness of the work in details relating to the pathology, diagnosis, and treatment of the affections falling within the domain of surgery, we have seldom failed of obtaining the information sought.—*Western Journal of Medicine*, Dec. 1869.

In the recent republication in this country of the last London edition of "Erichsen's Surgery" the practitioner and student are supplied with a guide and text-book which apparently leaves nothing to be desired. Full and complete in every essential particular, and inculcating the most advanced and correct modes of practice, it is certain to come into very general use. The additions of Dr. Ashhurst, though not extensive, are to the point; they relate chiefly to items of American practice.—*The Journal of Psychological Medicine*, Jan. 1870.

A noble volume, to review which would require an analysis of the whole domain of modern surgery. Within its comprehensive compass will be found every detail of information which is needed by the practical surgeon.—*N. Y. Med. Gazette*, Oct. 23, 1869.

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Enough of the old structure remains, however, to give to the work a familiar look to its early friends, with many of whom it deservedly holds a high place among elementary books on chemistry. Its comparative fulness of detail and general simplicity of style render it convenient and attractive as a book of reference for both teachers and students, especially medical students; while for the purposes of a drill book in class-room instructions, its very fulness is a bar to its usefulness for that purpose. In the hands of an expert teacher, however, who is master of the science, it is an admirable book, and equally so to the student who wishes faithfully to review the teachings of the chemical lecture-room.—*Silliman's Journal*, Nov. 1869.

This tenth edition, with its complete revision, makes it, in our judgment, the best work for the medical man now extant. Organic chemistry and animal chemistry, as applied to medicine, are particularly treated in the volume before us, which make the work of especial value to the physician.—*Leavenworth Med. Journal*, Dec. 1869.

The amount of matter condensed into this small volume is almost wonderful. It is pre-eminently the text-book for the student and practitioner, and will, of course, achieve a large success and wide popularity.—*Chicago Med. Journal*, Oct. 1869.

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VOL. XXVIII. SEPTEMBER, 1870. No. 333.

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CLINICS.

CLINICAL LECTURE.

Clinical Lecture on Abscess in different Localities. By Frederick C. Skey, Esq., Consulting Surgeon to St. Bartholomew's Hospital, etc.

There is no disease more universal than abscess, and none that demands from the surgeon clearer pathologic views, and the consideration of which will afford you material for much profitable reflection. It is scarcely necessary to define an abscess. It is a collection of pus contained in a sac or cyst. It may be preceded in its formation by a deposit of solid lymph, greater or less in magnitude; or an abscess may form without previous indication of its existence. Such examples are not infrequently found under the skin, and in various parts of the frame, following diseases which exert an unusually depressing influence on the system—such as fever, dysentery, phthisis, &c. This latter variety is invariably the product of extreme debility. Now, is this purulent deposit in the tissues of the body the result, as is too often supposed, of real inflammation—that is, of an active hyperæmia—or not? Assuredly it is not. It is associated with, and, more than that, it is the product of, a weak condition of the arterial system, and necessarily of all the vital powers. You will find the pulse, when the disease is extensive, weak; for, even if full and large in calibre, it is readily compressed. I wish you especially to recognize this feature in the formation and progress of simple abscess; the indications of weakness being, of course, greater when the abscess is large. The greater the debility the larger the abscess, and the slower its progress towards maturity and recovery.

You will naturally infer, then, that all abscesses occurring spontaneously, or rather without external and obvious causes, demand treatment by tonics and stimulants,

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and of such I select especially bark and wine. There is no remedy in the Pharmacopœia so potent in producing suppurative action as bark, and of all forms the simple tincture is the most efficient, in full doses of two or three drachms diluted with water. By the term suppurative action, I understand the conversion or breaking down of a mass of lymph, itself quite incapable of removal by the absorbents, into fluid pus—in fact, into abscess.

There is no form of abscess more illustrative of these truths than the disease when situated in the mammary gland, on which I have so often spoken in this theatre. It appears in weakly constitutions following long and severe confinements with loss of blood, or a low and innutritious diet, erroneously supposed to act as a preventive to inflammation, which, in truth, it actually fosters.

I speak of common *mammary abscess*, which appears at varying periods after confinement, in its first stage of deposit of lymph, when occupying a greater or less portion of the entire gland. Now let me assure you that we have no means within the circle of our present knowledge of obtaining the absorption of this solid mass or throwing it back on the constitution. Neither iodine, nor leeches, nor fomentations, nor purgatives, or other supposed remedies confidently proposed by young medical men, who, unfortunately observe little, and think less, are at all available to good. Yet you are aware that they are the agents which two-thirds of you at least would resort to; I am sure of this, for I am told so at every college examination. Pray understand the absolute impossibility of getting rid of this once deposited mass by the means alluded to, and which you are all prepared to adopt. I will not go so far as to say it may not be at least partially dissipated by absorption, but not by your means.

The proportion of the deposit that may be absorbed depends on the stage it has arrived at. If much advanced it will pass on almost entirely into suppuration. It has already entered on that of suppurative action; it will not remain stationary, and it must advance; but whether its progress towards its necessary consummation be slow or rapid, depends on your treatment. I say, in all abscess give bark freely, and generally wine; and the larger quantity of each that your patient can bear, the earlier will this solid mass break down in the centre and form a large abscess, which, when matured, and not before, should be freely laid open with the knife. If the deposit be recent, and the disease treated early on this sound principle, a portion of the mass will be taken up by the absorbents, indicated by the disproportionate quantity of pus to the large mass that has produced it.

Perineal abscess often presents itself in the form of a small, rounded, hard tumour, by the side of the urethra in the perineum, of about the size of a marble. Whatever you may suppose, or have been told to the contrary, it will answer, in my opinion, no useful purpose to adopt, in this form, any other treatment except that I have recommended to you in the case of mammary abscess. I do not consider it at all necessary to the true pathology of this disease that it should be based on any lesion of the urethra. It is not necessarily, nor by any means invariably, the result of urine infiltrated into the cellular tissue. It results from irritation conveyed to this tissue by the use or abuse of instruments employed in the treatment of stricture, real or supposed. When pus is thoroughly formed—and it is a great object of treatment to attain this end as early as possible—do not open the canal of the urethra, if urine does not pass through the wound. Should it do so there would appear to be even less necessity for this extension or the incision.

It is not always an easy diagnosis to determine whether fluid about the *knee-joint* is within the cavity of the articulation or without it. As a rule the diagnosis is readily attained in these cases. You will tell me that when the fluid extends over the patella, the disease consists of abscess around the joint; and when the patella is raised, and is pushed up by fluid underneath it, the collection is within the articulation. That is all very true. But in many cases the fluid, although confined to the joint, is not sufficient in quantity to raise the patella, and therefore you cannot always depend on that particular evidence; and in the other case, in which, consequent on the greater tenacity and closer adhesion of the integuments to the fibrous tissue upon the patella, I have seen several examples of what I have called the horse-shoe abscess around the knee—viz: when the matter has travelled round three sides of the patella without extending over it. Such cases are very deceptive. In forming your opinion—and a correct judgment is often indispensable to the recovery of your patient—you would, of course, place your greatest reliance on the local examination by the hand, and, this proving insufficient, weigh deliberately the evidence in favor of one or the other locality. If the fluid be in the joint, it may be a more serious affection, and the constitution takes cognizance of it as such. If external, probably the formation of abscess has been preceded by some local injury of a superficial kind, involving the cellular tissue, and in which the condition of the skin itself may add its testimony.

I now come to abscess on a larger scale. *Abdominal abscess* presents itself in the form of a large tumour, occupying the lower part of the abdominal walls, and commonly extending from the ilium towards the mesial line of the abdomen. The size is sometimes immense. It is firm, solid, and unyielding on pressure, but not very painful. I have known it on several occasions to be mistaken for malignant disease. It will remain stationary for a long period, and when it breaks down into pus, the fluid will extend in various directions, backwards towards the loins, almost invariably along the course of the femoral vessels to the extent of four or six inches; while it occasionally breaks its way through the sacro-ischiatic foramen, and forms an immense tumour on the gluteal region. This disease may be said to place life itself in jeopardy, not merely from its magnitude, but from the depressed condition of the system that produces it. In this feature it resembles carbuncle. I will tell you briefly some few particulars of the first case I ever saw. It occurred to a gentleman of advancing age, who first detected the disease while on a journey in Wales. He consulted a surgeon, who reported to his family that his disease was malignant. He consulted a second authority in the west of England, who echoed the opinion of the former gentleman, and advised his immediate return to London. I saw him in consultation with his friend, the late Dr. Rigby, on the day following. Other medical men were present. My reason for entertaining a doubt as to the malignant nature of the disease was based on the fact of its very recent appearance, which seemed to me fatal to the supposition of malignancy. I considered it a prospective abscess, and I gave him bark and good nourishing diet, with wine. In the course of ten days the swelling increased largely, and I thought I felt fluctuation. In the presence of several medical men, and in the confidence of my opinion, I punctured the tumour through the abdominal wall; nothing but blood followed the puncture! I then ordered brandy in place of wine, and turtle soup, and a thoroughly animal diet. In four days I again punctured freely, and evacuated about eighteen ounces of healthy pus. He recovered in a month.

In March last I saw a gentleman, aged seventy-five, with a large tumour in the abdomen, occupying the right side, and extending from the iliac fossa. I was told by the family medical attendant that his patient was the subject of malignant disease, that he had been visited by two eminent physicians (and they were both men of deserved eminence), who had pronounced his case hopeless from this cause. With some difficulty, I convinced his medical attendant that the great probability was in favour of abscess; and with his concurrence, I gave him large doses of bark, and about a pint and a half of port wine daily. Within one week, at least one-third of the abdomen was swollen and red, and the hand readily detected large fluctuation of pus, of which fact my colleague was as convinced as I was; but his family objected to an operation, and the poor gentleman carried his abscess to his grave. His attendant nurses were confined to the members of his family, and belonged to the amateur class. Such nursing is not very infrequently fatal to life.

Among the more formidable varieties of abscess, none are more serious than abscess resulting from cellulitis of the tissues within the pelvis, especially when following parturition in weakly women. These are cases which test the courage as well as the knowledge of the surgeon, for matter penned up within the recesses of the body in this complicated region must have exit. *Pelvic abscess* may occur independently of parturition, or during its progress. It is attended by local pain of a severe character, which is aggravated by digital examination. Tenderness on pressure strengthens the suspicion of pent-up matter. An examination per vaginam or per rectum detects either obvious or obscure fluctuation. Unless an early exit to this matter be made, the disease will extend throughout the subperitoneal coat of the uterus, bladder, and rectum. I have known one case in which this cellular inflammation, commencing in the tissue around the rectum, and into which the abscess actually burst, extended upwards around the uterus and bladder, and burst at the umbilicus. I have seen several cases in which the matter made its way through the sacro-ischiatic foramen, and presented along the line of the ischiatic nerve. Whenever the presence of pus is detected, and indeed whenever it is on good evidence even suspected, an exploring needle should be resorted to, followed, if required, by a good-sized chain trocar with its curved canula. In severe cases, nothing short of following up the examination whenever and wherever the presence of matter is indicated by local pain can afford a reasonable prospect of recovery. If, on examination by the rectum, a large collection of pus is detected, and when confirmed on examination per vaginam, a free incision by the side of the rectum through the perineum is more readily executed, and will afford a freer exit to the matter than puncture by means of a trocar through the walls either of the vagina or rectum.—Lancet, July 23d and 30th, 1870.

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Case of Chorea, with Clinical Remarks. By Dr. Wilks.

Charlotte P., æt. 17, was admitted into Guy's Hospital March 16, 1870, with chorea. She had always had good health; never had rheumatism. Four months ago, a brother of the patient's died. She was a good deal alarmed at the sight of the body, and was afraid to sleep in the house until after the funeral; after this she was observed to be silly and knock herself about; she would fall down whilst walking and strike herself against the furniture. During the three weeks before admission, she became rapidly worse, and could only talk with difficulty. She had been in a country infirmary, and was said to have been discharged incurable. She was a well-developed girl; had choreic movements of all parts of the body, the limbs being thrown about. She was scarcely able to articulate, and her answers were foolish and without reference to the question asked. She was quite unable to stand. The heart sounds were normal. She was ordered two drachms of the succus conii four times a day, and to have good living She continued this treatment for a fortnight. For a few days she appeared somewhat better; she then became worse, and the pulse reduced to 56. At the end of the fortnight, sulphate of zinc was ordered in grain doses, to be increased every third day; good living, with wine, as before. In about a week she was evidently improving, and then gradually got better, gaining strength and the movements less; and at the present time is able to walk about the ward.

Chorea is a very common disease, and several cases are always in the hospital. Dr. Wilks would therefore give the result of his experience. Having seen a host of remedies given, he was anxious to watch the disease unaffected by any drug; and he had observed that there was always a tendency for the symptoms to abate soon after admission to the hospital. He had placed the fact beyond all doubt by taking cases into the wards and administering no medicine. Some of the most striking results were seen in those who had been outpatients and had taken medicines, but, daily growing worse, were at last admitted within the building. Such children often rapidly recovered; and he attributed the change to their withdrawal from all those surrounding circumstances which were fostering the complaint at home, and to their being placed under moral control, and to the advantages of good living. Such instances might be mentioned without number; but of late there was the case of a girl who was so bad that she was obliged to be protected by sideboards to the bed, but who was well in a month; also the case of another girl who had been under a very intelligent practitioner for a great many months and nothing had been found of service; every medicine which had been proposed for the complaint had been administered, as well as every external remedy, but all of no avail. There was no other medicine left for trial; she was therefore simply placed in bed and ordered good living. She began slowly to recover. Having said so much, Dr. Wilks wished to declare his belief in the great value of tonics, and at the same time in the inutility of all those medicines which have a physiological action on the nervous system. He regarded chorea as a disease of debility, where the cerebro-spinal centres were weakened, and where restoration could be accomplished only by time, good living, and tonics. Thus, although in many cases recovery took place as rapidly as could be where no medicines were given, yet in many the cure was expedited by the use of tonic remedies. These were the well-known nervine metallic tonics, as zinc, iron, and arsenic. It was well known that the late Dr. Elliotson obtained deserved repute by the success with which he administered the hydrated oxide of iron; this and the sulphate of zinc in increasing doses were the usual remedies at Guy's Hospital. The late Dr. Hughes having an opinion that there was often gastro-intestinal derangement, was in the habit of ordering a draught composed of wine in which rhubarb had been steeped, three times a day. Now, since it would appear from a superficial view of a complaint where there is constant excitement of the nervous system that a sedative would be the appropriate remedy, it is not to be wondered at that there are those in the profession who are always seeking for some drug which will at once cure the complaint. Now from what has been said of the nature of the disease this is most unlikely or even impossible, and thus no surprise need be experienced at the complete failure of such remedies as opium or chloroform. Such medicines will quiet the system for a time, but as soon as their effects are passed off the symptoms return; seeing that the cause, being a chronic one, remains. It is much the same thing as rendering a madman insensible by opium, by which you merely neutralize the effects of the complaint without combating it. With these views and with this experience, Dr. Wilks admitted his incredulity with respect to conium: as, however, it had been so much vaunted, he had used it largely and fairly, but with no very favourable result. In very many cases he had changed it for the older and long approved remedies, when an improvement at once commenced. He warned his class against an error into which many of his pupils fell—that a chorea patient was necessarily better because he was quieter. The child in the first instance had slight irregular movements; subsequently these became more violent, and the patient was unable to stand; then not infrequently the limbs became utterly powerless, whilst the movements became less. He had seen many cases of children who, after violent chorea, lay perfectly quiet in bed, but were almost completely paralyzed in every part of the body. One of the best cases of relief by conium which had been shown him was the case of a girl who, a few days after taking the drug, became quiet, but although quiet she could not move a limb. Now this condition is often a later stage of the disorder, and does not necessarily show improvement. Even had it been produced by the conium and a condition to be sought for, it was evident that there was need then of the class of medicines which had been advocated; for, probably, no one would recommend conium in choreal paralysis. A patient with chorea cannot be said to be better unless he is stronger at the same time as the movements cease. It may be observed that in most of the published cases of cure by conium, the disease had run a very ordinary course. Dr. Wilks therefore advised his pupils when they had a case of chorea, to remove it if possible from the place where the complaint originated, then to give good living and tonic medicines of the kind indicated. The complaint being a chronic one of debility, they must remove the child from all those conditions which tend to prolong it, and then adopt all the well-known means to restore the tone of the nervous system.—Brit. Med. Journ., July 30, 1870.

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Clinical Lecture on Housemaid's Knee; Ranula; and some Forms of Nævus.—By FREDERICK C. SKEY, F. R. S., Consulting Surgeon to St. Bartholomew's Hospital.

There is no feature in the practice of the experienced surgeon more prominent than his appeal to what is termed heroic surgery on compulsion only. Young surgeons, who have not yet become familiar with the responsibility and the danger attached to large operations, are prone to an early resort to the knife before simpler means have been exhausted. It must not be forgotten that the interests of operative surgery invariably suffer from unsuccessful, and still more from fatal, operations; that under the most promising conditions human nature shrinks from its appeal with fear and revulsion; and that failure in one case will probably deter many from submitting to operations which offer results far more encouraging. The real philosophy of medicine and surgery consists in paying due homage to nature, the great restorer of health.

I propose to-day to tell you of the efficacy of a simple thread in the treatment of three not very uncommon diseases, which were formerly, and indeed at a recent date, subjected to that of a more violent character.

The first of these diseases is that of the enlarged bursa on the patella, known as the *Housemaid's knee.* It is a very common affection, and is productive of great discomfort and inconvenience to its possessor. It is not caused by direct pressure, but, like corns, bunions, and blisters on the hand, &c., it results from oblique traction of the skin in moving from side to side; in fact, from friction. Corns are not limited to people who wear tight boots. These bursæ assume various forms and sizes, from that of a child's ball to that of an orange. They are soft or hard—that is, the bursal cavity may be filled with a serous fluid, or the cavity may be all but obliterated by a thick, fleshy mass of lymph, which forms the body of the tumour. The former are the more common, but both are to be met with, whether in hospital or in private practice. Now what is the treatment you would adopt for the cure? I will tell you. You begin with tincture of iodine—iodine the universal, and, I would add, the worthless. In truth, iodine, as a local remedy in all cases of this description, is almost, if not quite, inoperative to either good or evil. Can any one of you, gentlemen, assure me you have ever seen the smallest advantage derived from it in the treatment of bursæ? If you have, I have not. The next remedy recommended is the repeated application of blisters. I have seen cases in which blisters have been applied to the extent of some eight or ten without benefit, and, indeed, one does not see why they should prove useful in removing either the fluid contents of a bursa or the mass of lymph deposited around it. You will find a stout thread of silk passed through the centre of the tumour far more efficacious than either the iodine or the blisters. To remove these swellings by excision is to return to the barbarous surgery of our forefathers, and you will not do that operation with impunity. It is an operation of expediency, and is not unattended with danger. The effect of the seton thread is to convert the entire mass into an abscess, and this end is generally attained in the course of a week or ten days. Inflammation will follow of a somewhat severe character, if the thread be allowed to remain in the wound after the exudation of pus from the two orifices made by the needle. The cases therefore require a surgical eye upon them daily after a few days have elapsed. It is now an abscess; it was a bursa; and the abscess, when matured, should be opened freely. I have repeatedly seen the hard mass of the diseased deposit entirely absorbed without suppuration.

Ranula consists in a collection of glairy, albuminous fluid within a cyst formed under the tongue, varying in size from that of a cherry-stone to that of an orange. It is by some authorities considered to be a dilated orifice of a sublingual duct, or of that of the submaxillary gland; by others, that it is a formation independent of these natural orifices. I incline to the former pathology from the fact of my having extracted a small calculus from the orifice of a duct in a case of ranula, on the removal of which the disease underwent a spontaneous cure. When small, and, it may be presumed, in its early stage, the membranous cyst is thin—has the appearance of translucency, and is marked by minute veins coursing over it from below upwards. When at the greatest magnitude I have ever seen it its cyst is thick and fleshy, and it extends from below the floor of the mouth downwards to the level of the cricoid cartilage, forming a large tumour, palpable to sight as well as to touch. Within the mouth it occupies the entire cavity from the floor to the roof, the tongue being pushed backwards, having the apex in contact with the soft palate. Deglutition is greatly impaired, and the attempt to swallow solid food is frustrated by the paralyzed condition of the agents engaged in that act. Thus the constitution suffers from partial inanition, and the disease, trivial enough in its early stages, now makes serious inroads on the physical health.

Now, what are the resources of the surgeon? You will tell me either to snip out a piece of the cyst, or to apply nitrate of silver, or, with heroic daring, to dissect out the entire cyst. But a far simpler and far more efficient remedy than either is a simple thread of silk or flax, passed by means of a much-curved needle through the centre of the tumour. It is desirable that the seton thread be passed through the centre, and not through the side, of the tumour. At the expiration of five or six days, or sometimes earlier, the ranula will be found reduced to less than half its original size, leaving the thread at some distance from it, but still clinging to the mucous membrane. Of course you remove this first thread, and apply a second in like manner through the residue of the tumour, which will finally disappear in the course of three or four days. The large cysts I have described, and of which I have treated several, are amenable to the same treatment. The thread must be passed through the long axis of the swelling from the mouth downwards. The needle must be strong and nearly straight, and the thread thick in proportion; and the point of the needle is brought out through the skin at the lowest point at which the swelling is perceptible, and the two ends tied in a knot at the angle of the mouth. The reduction in the size of the swelling may be dated from a short interval of a few days from that of the introduction of the thread. I have never failed to effect a complete cure of ranula by these means, be the disease large or small; and the pain attendant on the entire treatment amounts to almost nothing. There is no danger of hemorrhage from the introduction of the needle in the large cases, because the tumour in the neck is superficial, leaving the carotid artery and its branches in their natural relations to the structures beneath it. The only vessel requiring observation and avoidance is the external jugular vein.

The seton-thread is a very efficient agent of cure in some cases of *Nævus*. It is not superior to treatment by escharotics in all cases. It is slow in its action, requiring the lapse of weeks; but it has the advantage of saving the skin from destruction, and of leaving a less palpable scar than any other remedy with which I am acquainted. If the nævus is large, the threads should be passed across the morbid growth in various directions, and not necessarily through the centre, but occupying its substance in all directions. The swelling, if large, may require six, eight, or ten threads. The object to be obtained is suppuration, and when obtained, and detected by the oozing of pus, the thread or threads should be removed; and, if conveniently placed for the purpose, a little pressure should be applied.—Lancet, July 30, 1870.

HOSPITAL NOTES AND GLEANINGS.

Cases of Pleuritic Effusion, treated in London Hospital, with Remarks, by Dr. Sutton.—The treatment of all diseases that are very common must always be of interest to the profession; and there are few diseases more common than pleurisy. If we compare the treatment of pleurisy as advised in standard works on medicine with what is seen in daily hospital practice, we cannot but be struck with the activity recommended in books, and with the mild, cautious, and, in many cases, expectant system pursued in several of our hospitals. In pleurisy, as with many other diseases, the rule would now appear to be to treat each case on its own merits; and this must necessarily be the case when we consider that the attack must vary with the cause of the disease; for instance, pleurisy excited by pyæmia will run a very different course from pleurisy supervening in the course of rheumatic fever. Pleurisy excited by tubercular abscess near the surface of the lung, tends to run a different course from pleurisy coming on at the end of scarlatina.

Case of free Pleuritic Effusion; Influence of Rest; Recovery.—There have lately been at the London Hospital several cases of pleuritic effusion which appear to us to be very instructive. In illustration of the expectant treatment of pleuritic effusion, we may mention a case that was recently under the care of Dr. Sutton. The patient, a man about forty years of age, was admitted into the London Hospital with large pleuritic effusion on the left side. He was ordered to remain in bed; and, with a view of satisfying him, half a drachm of a solution of acetate of ammonia was administered three times a day. The patient had no other medicine, nor any application to his chest. The treatment was absolute rest, and he recovered remarkably well. This patient had been ill about two weeks before coming into the hospital. He complained of cough and shortness of breath. On examination, he was found to have a very large effusion into the left pleural sac. There was absolute dulness in the lower three-quarters of the left chest. Respiration was inaudible, excepting close to the spine and over the apex of the lung. Tactile vocal fremitus was absent. The heart's apex-beat was felt close to the right nipple; the other organs appeared normal. He remained in bed one month;

and, at the expiration of that time, the effusion had entirely disappeared. Respiration was audible very distinctly all over the left side, accompanied by a friction sound; the dulness had disappeared, and the heart had returned to its normal position. This patient left the hospital about five weeks after admission, convalescent.

Pleuritic Effusion; Treatment by Rest; Recovery.—A second case was a male, aged 16 years, who was in the London Hospital with well-marked evidence of one pleural cavity being almost full of fluid. The heart was very much displaced to the opposite side. With the exception of this effusion, the patient appeared healthy. He was ordered to remain in bed; no medicine was administered; nothing was applied to his chest; and the effusion entirely disappeared. In the course of six weeks he was discharged cured. Dr. Sutton has seen this patient several times since, going about quite well.

Pleuritic Effusion; Treatment by Rest; Recovery.—The third case was that of a middle-aged man in the Hospital, under the care of Dr. Ramskill. There was a large effusion on one side. He was ordered to remain in bed, and a little coloured sugar and water was administered. In a month he was convalescent, the effusion having disappeared.

Remarks.—There have been other cases in the hospital of a similar kind. Dr. Sutton remarked that pleuritic effusion of recent origin which has come on within the last two, three, or four weeks, has thus been observed to disappear when treated by absolute rest, unaided by medicine or any external application; and the same thing has been seen where there was considerable but recent effusion into other serous cavities. Ascites due to cirrhosis of the liver disappeared in a patient who was in the hospital, and treated by rest only; and the patient was convalescent, and left the hospital in the course of a month. The same favourable result has been witnessed with pericardial effusion during the course of rheumatic fever. Dr. Sutton further said that, when we see that patients having recent pleuritic effusion may entirely recover in the course of a few weeks, without the aid of medicine or treatment excepting rest, it is a strong argument against the operation of tapping the chest, and this operation is very rarely required when the effusion is recent and consists of serous fluid. It is, however, urgently demanded, and must be done to save life when the effusion consists of pus.

The presence of pus is accompanied by difficult and frequent breathing; and experience has shown that the state of respiration is one of the best guides as to whether this operation is required or not. It is considered advisable to tap the chest when there is a large effusion and urgent dyspnœa; and, in Dr. Sutton's experience, it is sometimes requisite, in order to prevent death, to perform this operation when the breathing is very much embarrassed, although the effusion into the pleural cavity may be moderate in quantity. Dr. Sutton remarked that he had more than once been misled in being guided by the quantity of fluid, and not by the state of the breathing.

Moderate Effusion; Sudden Death; Question of Tapping.—Dr. Sutton related the case of a female, aged 43 years, who was admitted into the London Hospital on January 3d, 1868. There was dulness in the lower half of the left side, with absence of respiration and tactile vocal fremitus. The heart was displaced. In the upper part of the lung, the respiration was puerile, and percussion clear. The patient was able to raise herself readily, and sit up in bed, but she seemed anxious to lie down. Breathing was quick and laboured; the face was not livid; the intellect was clear; pulse quick and soft. Seeing that the pleura was only about half full of fluid, it was not considered requisite to tap the chest. A linseed-meal poultice was applied to the side, and a small dose of opium was ordered, to procure sleep. During the night the patient suddenly and unexpectedly died. The autopsy showed about forty ounces of pus in the left pleural cavity, and granular kidneys. The remainder of the body was healthy.

Small amount of Empyema; Great Constitutional Disturbance; Paracentesis; Recovery.—Great constitutional disturbance and difficulty of breathing may be caused by a small effusion of pus into the pleural cavity. This was seen in the case of a sailor under the care of Dr. Ramskill. He was very ill; the breathing was quick and laboured; his pulse was very quick The patient was seen day by day propped up in bed, in a dreamy semi-delirious state, with sordes about the lips, and a high temperature. Each day he seemed to be growing worse. The physical signs showed slight effusion over the lower part of the left lung. There was dulness, with diminished tactile vocal fremitus and feeble respiration over the lower third of the left lung. The heart was a little displaced, but it was not to the right of the sternum. As this patient was almost daily becoming worse, it was considered advisable to tap the chest, and about fifteen ounces of pus were withdrawn. The patient improved after the operation; his breathing was very much relieved; and he expressed himself, after a few days, as feeling very much better and stronger. In the case of the female aged 43, as the physical signs did not show any great amount of effusion, it was not considered requisite to tap the chest. The case, however, showed that difficult breathing is a guide much more to be relied upon than the physical signs; therefore, in the second case, seeing that the breathing was very much embarrassed, although the physical signs showed a small amount of effusion, the patient was tapped, with marked and decided benefit. When there is great difficulty in breathing and constitutional disturbance, with a small effusion, and no other disease to account for such dyspnœa, we are led to conclude that the fluid in the pleural cavity is pus. In such cases Dr. Sutton has a grooved needle passed into the chest, to ascertain if the effusion consists of pus; and when found to be so it is evacuated.

Remarks.—Empyema and sudden Death; Hydrothorax; Disappearance of Effusion; How long Fluid should be allowed to remain.—It is in cases where the effusion is purulent that death is seen to occur suddenly and unexpectedly. Death caused by acute and recent effusion of serous fluid in the pleura, is very rare excepting as a secondary affection coming on in the course of Bright's disease, or some other organic change. Dr. Gairdner, Clinical Medicine, page 374, states that, during eleven years' Hospital practice, he had only seen two persons suffering from acute pleuritic effusion die. Experience, therefore, appears to show that in some cases a large pleuritic effusion will entirely disappear in the course of five or six weeks, and leave the patient, so far as we can estimate, sound. In other cases, the absorption of the fluid is very slow, and at the end of six or eight weeks there is very little change. In such instances, the question arises, Is it safe to allow the fluid to remain longer, for it may act as an irritant, and excite in the pleura a renewal of the inflammation; the lymph effused may become organized, contract and compress the lung; and in this manner the patient may be permanently damaged. In the treatment of pleuritic effusion, therefore, the most important question is, how long is it safe to allow a large quantity of fluid to remain in the pleural sac without irreparably injuring the lung? The cases referred to as having been under the care of Dr. Sutton, were examples of acute pleurisy with effusion of a few weeks' standing. There was no other appreciable disease of the body. Such are the cases that do well by rest. It will probably be admitted that no one can define what length of time a quantity of fluid may lie in the chest without injuring the lung; for it is remarkable that a large quantity may exist for three or four months, and, after this time, the fluid may gradually disappear, the lung expand, and the patient apparently recover. While recording that such is the fact in a case now and then, it will, perhaps, be allowed that the pleura more frequently becomes greatly thickened when fluid has remained in the chest several months.

Question of Paracentesis.—Considering that the pleura is very liable to become thickened, and the lung bound down in these chronic effusions, some physicians have strongly advocated tapping in an early stage of acute pleurisy. Other physicians, considering that great danger might arise in consequence of air being admitted into the pleural sac, strongly oppose the operation of letting out the fluid. To what extent this danger really exists, has never been clearly defined; and there is strong evidence indicating that the pleura may be tapped and air admitted without any ill effects following. There are the well-known cases of Dr. Hamilton Roe. He operated in twenty-four cases, and a considerable quantity of air entered during the operation in several of them, and in not one case did any evil effects follow. Dr. Bowditch operated in twenty-six cases in which the fluid was serous, and twenty-one made good recoveries.

A Remarkable Case of Pleuritic Effusion; Paracentesis performed eight times; Remarks.—A very instructive case is recorded in the Post Mortem Register of the London Hospital. A patient was on several occasions under the care of Drs. Davies, Ramskill, and Sutton. This patient was a policemen, and was treated by Mr. Rolfe, who very kindly sent the case to Dr. Sutton, at the Chest Hospital, Victoria Park. The pleura, in this case, was eight times tapped. About one hundred and fifteen ounces were removed on the first occasion; and, on the six subsequent tappings, from 115 to 130 ounces of fluid were removed; on the eighth occasion, 150 ounces were drawn off. The fluid removed on the first occasion was turbid serum, which, on allowing it to stand, and placing the sediment under the microscope, was found to contain pus-corpuscles; and, on the eighth occasion, a similar fluid was withdrawn. An ordinary trocar was used in the operation, and air entered freely each time; yet, this turbid serum did not become converted into thick pus, nor did the admission of air alter the fluid. It was the same when last withdrawn, as on the first occasion, before any air had entered the pleura. For the sake of brevity, we refrain from giving the details of the case, and confine ourselves to the following observations of Dr. Sutton.

When a large quantity of fluid has been present in the pleural cavity for many months, the parietal and visceral pleura usually become much indurated and thickened. In the case of this patient, who was tapped eight times, both these layers of the serous membrane were converted into a firm, hard, tough, fibroid substance, an inch in thickness. This was the case immediately under the ribs over the lung, and the pleural sac was converted into a large cavity with thick indurated walls. In consequence of this induration and thickening of the pleura, the lung was bound down, and it was impossible for it to expand; therefore, in such cases there is no hope that the lung will ever be able to resume its functions; and it is useless to let out the fluid with the hope that it may do so. The fluid accumulates—and it was so with this patient—in such large quantities that it displaces the heart, encroaches upon the opposite lung, and threatens death by apnœa; therefore, it is necessary to tap the pleural cavity to relieve most urgent distress, and often to ward off immediate death. It is difficult to say how many times a chest may not be tapped. It was, however, observed in this patient, that the fluid increased in quantity, more was removed at each operation, and his power of endurance became each time more feeble; so that the operations distressed him more and more, and it was evident that to go on in that course would certainly lead soon to his death. It was deemed, therefore, advisable to keep the pleural cavity continually open, and by this means to prevent the fluid from accumulating; and it was hoped that the walls of the sac would gradually contract, and the empyemic cavity be closed. Before this occurred, however, the patient died. It may be instructive briefly to consider what this case appears to show should be our proceedings in any future similar case. It is clear that, in order that the empyemic cavity may be closed, one of two things must occur; either the lung must expand—which in this case was impossible—or the chest-wall must fall in. To bring about the latter, the cavity must be empted of fluid and air, and then the pressure of the external atmosphere would gradually press in the ribs, and the walls of the cavity would be brought together, adhesions would probably take place, and in this manner the sac would be occluded. It is, therefore, necessary to create a vacuum. If, however, the cavity be filled with air—that is, air allowed to enter in the act of tapping—then the external pressure of the atmosphere is counterbalanced by the internal pressure of the air in the sac. It would then appear that we ought to draw off a portion of the fluid, and not let in any air; then, a week or so afterwards, draw off another portion; and thus by degrees the ribs would be pressed inwards and the cavity be closed. It was hoped that with this patient the indurated pleura would contract, and that this would be promoted by preventing the fluid from accumulating. It is clear, however, that contraction sufficient to obliterate an empyemic cavity having very thick walls must be a very slow process indeed, and may probably take many months, for we know that fibroid tissue contracts very slowly. In the mean time, the presence of air excites chronic suppuration on the internal surface of the sac, and the patient, worn out by a very exhausting discharge, may die of asthenia before the sac is obliterated.—Brit. Med. Journ., July 16, 1870.

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Aneurism opening into Left Bronchus avoiding the Recurrent Nerve, wholly without Spasmodic Symptoms.—This case is interesting, because the whole of the left pulmonary plexus of nerves was quite destroyed, while the left recurrent laryngeal escaped, and under these circumstances there was not any spasmodic affection of larynx. The patient was a man, aged 65, who was in Edgware Workhouse Infirmary, under Mr. Blasson's care. Mr. Blasson detected the aneurism, and sent the case to Guy's, under the care of Dr. Moxon. The patient had had an incredible share of serious accidents. The chief of these were that thirty-six years ago he fell and broke his ribs, dislocating his shoulder; afterwards he fell twenty-six feet, and was laid up a long time; then four years ago he was run over across the back of his chest; and since that time he had never been well, but always had pain in his back. For fourteen months he had suffered from cough and occasional hæmoptysis.

On admission he had cough and moderate permanent dyspnœa; sputa in moderate amount of a glairy matter, more or less tinged with bright blood, sometimes of the "currant jelly" character. The left chest was resonant everywhere, but the breathing sound in it was very deficient, almost absent at times, at other times very plain but distant and tubular, no pulsation could be felt. There was no abnormal cardiac murmur, but the second sound was so loud and sharp, that it at once arrested attention. One also *heard a beating* in the left suprascapular region. There was no enlargement of veins or glands. He did not suffer more than an ordinary case of senile phthisis, and the physical signs alone led to the conviction that the case was one of aneurism. Four days before his death his temperature suddenly rose to 103°, and he felt ill. The sputa became tenacious, and diminished in quantity. He sank with signs of acute pneumonia.

The *post-mortem* gave very neat and convincing, if not conclusive, evidence of the traumatic origin of his aneurism. There was in each chest an old adhesion of the lung, near its root, to the thorax. On each side this was of the size of the palm of one's hand. On the right side the adhesion had certainly nothing to do with the aneurism, which did not affect the right chest, and on the left it extended to a distance beyond the very limited contact of the aneurism with the thoracic wall. These adhesions were just at the spot where in his last accident he had been run over, The aneurism was at a point in the aorta just opposite these adhesions, which it did not cause, nor did they cause it. But a common cause existed for both, in the passage of a cart-wheel over the spot where these changes were found. The aneurism was fusiform, implicating the whole circumference of the vessel; it was as large as a potato, and from its left side a secondary aneurism had extended into the left lung, whose tissue was compressed before this sac, which had the size of a half orange. The left recurrent laryngeal nerve passed round the aorta just above the aneurism, and was not at all compressed, but perfectly free. But there was no back to the left bronchus for nearly the whole of its course: it was replaced by ragged aneurism clot, which showed a rough surface towards the interior.

This case offers a very exact and conclusive experiment in nervous physiology. Such evidence as it affords is by far more reliable and satisfactory than any results can be which are got by those severe mutilations of animals which are necessary to expose and divide nerves so deeply seated. The effect of it is to support strongly the belief that the irritation of the bronchial plexus does not produce laryngeal spasm. Another very important reflection arises in considering the state of the left lung after the removal of its proper nervous influence. There was no sloughing of the lung, but there was lobular pneumonia producing scattered hepatizations in the centres of the lobules, about the ends of the bronchial tubules. The same condition existed in the right lung to a less extent, although there was no pressure on its pulmonary plexus. Now, very important consequences have been ascribed to destruction of the pulmonary nervous plexuses, especially sloughing of the lung which is not infrequent as a result of aneurismal pressure on its root. Other physicians prefer to think that such sloughing may be due to obstruction of the bronchial artery, which supplies the tissue of the lung. Dr. Moxon held that this case —as well as others that he had seen—opposed these views, and he preferred the following as the true explanation of the broncho-pneumonia of this case, and sloughing in others: namely, that the irritated and compressed bronchus becomes loaded with excess of secretion which it cannot void, and which consequently decomposes more or less, and that these retained secretions set up inflammation that extends to the tissue of the lung, causing more or less severe inflammation even to the pitch of producing sloughing of its tissue. This occurrence would be equivalent to the inflammation and destruction of the kidney, which occurs in consequence of stricture of the urethra, and retention of urine. Aneurisms pressing the air-tubes usually kill by this pneumonia.—Med. Times and Gaz., July 23, 1870.

MEDICAL NEWS.

DOMESTIC INTELLIGENCE.

Cure for Toothache.—Dr. HENRY T REYNOLDS, of Baltimore, writes to us that "for eighteen months I have been using acetate of lead as a remedy for what Burns calls 'the hell of all diseases'—toothache. I find it to act better than any of the numerous remedies proposed in the books, and in cases in which it is applicable the relief is instantaneous. Let the patient apply from one to three grains to the cavity for a moment or two, then spit it out. It fails in fewer cases than any remedy that I have tried—not more than eight per cent.

A Simple and Efficient Substitute for the Stomach Pump.—Prof. JOHN T. HODGEN states (St. Louis Med. and Surg. Journ., July, 1870) that about a year ago he had a case of stricture of the œsophagus so narrow that his patient could not swallow even liquids. "To sustain life I resorted to a small stomach tube (a gum catheter, in fact); as a means of injecting liquid nourishment; to this I fixed the elastic tube of one of Davidson's syringes.

On one occasion the vessel containing the liquid happened to be higher than the patient's stomach, and I observed while the syringe was not being used, that the liquid continued to flow into the stomach—the action being that of a siphon. I at once, to test the siphon, substituted a simple elastic tube for the syringe, and found the stomach could be as readily emptied as filled. Thus I conceived the idea of using a siphon instead of a stomach pump, and have used the same in a case of poisoning recently with the most complete success.

I attach four feet of India-rubber tubing to a stomach tube, fill both with water by simply dipping it into the liquid end first, then compressing the elastic tube between the thumb and finger to keep the fluid from running out, introduce the stomach tube, lower the outer end of the elastic tube. and the contents of the stomach pour out as readily as if from an open vessel. When the fluid ceases to flow, I dip the outer end of the tube beneath the surface of water, elevate the vessel containing it, and the stomach is soon filled; lower again the outer end of the tube and the stomach is emptied. This can, of course, be repeated as often as is necessary.

The advantages claimed for this simple contrivance are, that it may be almost always improvised, is of speedy and easy application, has no valves to become obstructed or deranged, and is less expensive than a stomach pump.

The same principle may be applied in injecting fluid into the bowels, as indeed it has been for injecting into the bladder, uterus, and vagina."

Protracted Gestation.—Dr. L L. BEDELL reports (Leavenworth Medical Herald, August, 1870) having delivered a woman in her sixth pregnancy, June 12, 1870, 10 o'clock A. M., of a healthy female child, weighing nine pounds. After the delivery the mother informed him that her catamenia had ceased July 25, 1869, and that she had expected to be confined about the 1st of May, 1870; that in her previous gestations she had been able to calculate pretty accurately the period of her confinement. If this statement be correct, that her last menstruation ceased July 25, 1869, 10 months and 18 days elapsed before her delivery, or 322 days, and if we deduct 10 days after the disappearance of her menstrual flow, we will still have a period of gestation of 312 days.

Medical Instruction in Philadelphia. University of Pennsylvania—Medical Department.—The lectures of the session of 1870-1, in this venerable school, will commence on the second Monday (10th) of October, and close on the last day of February ensuing. The dissecting rooms will be open from the middle of September.

Jefferson Medical College, Philadelphia.—The next annual session will commence on the second Monday in October, 1870. Preliminary lectures will begin on the first Monday in September.

The usual well-known private schools for the instruction of medical students will open on the 1st of September.

These, with the various hospitals, dispensaries, college cliniques, and private courses of lectures, will afford every facility for the instruction of students in all departments of professional knowledge.

—

Tincture of Erigeron in Alveolar Hemorrhage.—Mr. PERKINS states (Dental Cosmos, Aug. 1870,) that the tincture of erigeron is more efficacious than Monsel's salt for arresting the troublesome hemorrhage, sometimes following extraction of teeth.

FOREIGN INTELLIGENCE.

Severe Case of Angina Pectoris, relieved by Morphia and Nitrate of Amyl.—E. K., aged 28, laundress, married, was admitted into the Middlesex Hospital, under the care of Dr. Thompson, on June 1, 1870, suffering from the effects of an attack of angina pectoris, which happened two days before. It appears that her father died at the age of 53, with symptoms of angina pectoris. The patient herself has had two attacks of rheumatic fever, both of which occurred in 1861, and since that time has suffered from dyspnœa on exertion, palpitation of the heart, and occasional hæmoptysis. One of her children has been subject from its birth to palpitation, dyspnœa, and blueness of the lips, but is otherwise healthy. During all the time she remained in the hospital (exactly two months) she had frequent attacks of angina pectoris, occurring at first almost every day, but latterly at intervals of nearly a week. While labouring under an attack the typical symptoms of angina pectoris were exceedingly well marked, more especially the dread of death, and the radiating pain, which frequently extended to the head and face, and down both arms and legs. On auscultation a loud purely systolic murmur was heard at the left apex, audible also at the back, and a very faint diastolic murmur at the base.

The treatment adopted during the attacks was as follows: From the day of admission to June 19 all the paroxysms were treated with the subcutaneous injection of morphia, beginning with one-sixth of a grain and gradually increasing the dose till one quarter of a grain was reached. The result of this plan of treatment was uniformly to cut short an attack in about five minutes after the morphia was injected. Owing to the sickness, vomiting, and headache which often resulted from the morphia, more especially when the dose came to be increased, Dr. Thompson determined to try the effect of the inhalation of nitrate of amyl in controlling the paroxysms. The mode of its administration was simply to allow the patient to inhale the amyl from a bottle, the mouth of which was applied to one nostril. After the inhalation had been cautiously continued for about ten seconds the face became somewhat flushed, the veins slightly prominent, the pulse slower and fuller, and the patient, after drawing a long breath, declared herself quite free of pain. The same train of symptoms happened every time the amyl was inhaled. It never failed to check a paroxysm; it produced no unpleasant after effects; it did not lose its power from repeated use. On the contrary, the occurrence of paroxysms diminished during the time the patient was under this plan of treatment.—Med. Times and Gaz., Aug. 6, 1870.

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Effectual Plugging in Epistaxis.—It is generally expected, when the anterior and posterior nares are plugged, that a clot forms on the floor of the nose which compresses the oozing vessels. M. Fano, of Paris, endeavours to compress with more certainty in the following manner: Instead of tying a pledget of cotton or lint to the free end of the thread which has been made to enter at the nose and emerge from the mouth, M. Fano ties a series of little pledgets along that string, in the same fashion as papers are tied to the tail of a kite. The string, being now pulled from the nasal end, is made, by a little management on the velum, to pass behind the latter with its four or five pledgets, until the latter are fairly lodged in the nose, the last pledget of course occluding the aperture of the posterior naris. The front may be plugged as usual. The whole is left four days, and the success, in cases cited by M. Fano, has been remarkable.—Lancet, July 2, 1870.

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Epidemic Smallpox and Vaccination. There are some important points in the report of M. BESNIER on the epidemic smallpox at Paris which are worthy of notice. Thus in relation to *vaccination*, the observation has only to be repeated in this as in all epidemics, that the mortality in non-vaccinated cases is very great, and that individuals who have been vaccinated may, while yet only young, sometimes have lost the benefit derived from vaccination. But a fact revealed by the present epidemic is that *vaccinated subjects* may furnish also a very considerable mortality. Thus among the smallpox patients at the Maison Municipale de Sante under M. Besnier's care, it was quite exceptional that they had not been vaccinated in childhood, and yet the mortality was at the beginning of the epidemic not less than 18 to 20 per cent. Of 23 patients dying only one had not been vaccinated; 4 exhibited no vaccine scars; but in 18 there were well-marked vaccinal cicatrices. In fact, the duration of vaccinal influence may be much more ephemeral than is generally supposed, and during a severe epidemic like the present, all cases without exception should be revaccinated. M. Besnier has just obtained a perfect vaccine pustule in a child 4 years and some months old, who four months before he had vaccinated with complete success, as testified the magnificent cicatrices. The question then arises whether a single inoculation should be considered sufficient, and whether it should not be repeated until no result whatever is produced. So with revaccination, for it is a complete error to suppose that absence of success of revaccination is a proof that the immunity conferred by vaccination persists. It is usually supposed that patients who prove refractory to all attempts at vaccination possess also an immunity from smallpox. During the present epidemic several such have died.

In reference to the treatment of the disease, M. Besnier observes that the hopes entertained by M. Chauffard and others concerning the value of phenic acid have not been realized. As an internal remedy it seems of no avail, but it is a very useful external agent for cleansing the pustules and crusts.

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Effects of the Admixture of Races.—Prof. Agassiz states: "The physical and moral deterioration resulting from the admixture of pure races is, perhaps, nowhere so clearly shown as in Brazil. The hybrid between the white and the negro, called the mulatto, is too well known to require description. The hybrid between the Indian and the negro, called cafuzo, has none of the delicacy of the mulatto; his complexion is dark, his hair long, wavy, and curling, and his character, instead of being 'confiding. but indolent,' is described by Agassiz as exhibiting 'a happy combination betwen the jolly disposition of the negro and the energetic, enduring powers of the Indian.' The hybrid between the white and Indian is called mameluco, and is described as being pallid, effeminate, feeble, lazy, and rather obstinate, the Indian influence having apparently obliterated the higher characteristics of the white, without imparting its own energies to the offspring. It is very remarkable that the Indian, whether in crossing with a negro or a white, makes a deeper impress on his progeny than the other races; and, in accordance with this fact, it is observed that, in further crossings, the pure Indian characteristics are resumed, and those of the other races thrown off. 'Let any one,' says Professor Agassiz, 'who doubts the evil of this mixture of races, and is inclined, from a mistaken philanthropy, to break down all barriers between them, visit Brazil. He cannot deny the deterioration consequent upon an amalgamation of races more widespread here than in any other country in the world, and which is rapidly effacing the best qualities of the white race, the negro, and the Indian, leaving a mongrel nondescript type, deficient in physical and mental energy. Let us profit by the experience of Brazil, and learn the double lesson: open all the advantages of education to the negro, and give him every chance of success, but respect the laws of nature, and preserve, as far as possible, the distinctness of his natural characteristics and the integrity of our own."—Journey to Brazil, by Prof. and Mrs. Aggassiz.

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Means of distinguishing Real from Apparent Death.—Dr. Laborde communicated to the French Academy of Medicine (July 26, 1870) an interesting memoir on some of the physical phenomena of life, and on their application to the distinguishing real from apparent death. He states that if a polished steel needle be inserted to a sufficient depth into the muscles of an apparently dead subject, and allowed to remain, in generally a short time it loses its polish and becomes oxidized; whilst this oxidation does not occur when the needle is introduced into a dead subject, if the needle be allowed to remain even as long as an hour. This absence of oxidation, with concomitant phenomena is, according to Dr. L., a constant sign of real death.—L'Union Médicale, 28th July, 1870.

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Obituary Record.—The great leader of Ophthalmic Surgery, **Albrecht von Graefe**, of Berlin, died on July 20, 1870, in the 45th year of his age. He has gone to his rest in the zenith of his glory, but he has left as a legacy to posterity a record of the facts in the treatment of eye disease which his master mind had accumulated—foundation-stones, upon which others yet may build. The great work of von Graefe's life was his discovery of the cure of acute glaucoma—a disease which terminates in permanent blindness, and which had hitherto baffled all treatment. It was no mere guess or hap-hazard trial which led Von Graefe to perform iridectomy for the relief of this terrible affection. Having thoroughly investigated the nature of the glaucomatous process, and having satisfied himself that all the symptoms were due to an increase of the intra-ocular pressure, and that no relief was to be obtained by medicinal means, he sought, by local treatment, to reduce this undue tension to its normal standard. First he tried paracentesis of the cornea, but the result was unsatisfactory; the relief it afforded was generally slight, and, with but few exceptions, it was only temporary. He next turned his attention to the merits of iridectomy—an operation which he had frequently performed in recurrent iritis, irido-choroiditis, and in various extensive corneal affections. The effect of iridectomy in causing a recession of the protrusion in many cases of partial staphyloma of the cornea satisfied him that this removal of a portion of the iris exercised a wonderful influence in reducing the tension of the eye. He resolved, therefore, to apply iridectomy to glaucoma, and in June, 1856, he performed the first operation for the relief of a disease which, up to that date, had been irremediable. In a paper published by Von Graefe in his *Archiv für Ophthalmologie*, and afterwards translated by Mr. Windsor for the Sydenham Society, he concludes by stating that, having followed some of his cases of glaucoma on which he had operated for more than a year, "I think I cannot be mistaken in regarding iridectomy as a true curative treatment of the glaucomatous process"—an opinion which has since been indorsed by all the best ophthalmic surgeons in Europe and America.

Although the cure of glaucoma was the crowning act of Von Graefe's life, yet in all the departments of Ophthalmic Medicine and Surgery he was a great master. In the volumes of the *Archiv für Ophthalmologie* he has written upon almost all the subjects connected with the surgery and pathology of the eye, amongst which the articles on strabismus, detachment of the retina, sympathetic ophthalmia, and cataract, are specially noticeable. His last work was the perfection of his "modified linear extraction" of cataract, an operation which has been attended with very brilliant results.

The world-wide renown which Von Graefe obtained must be attributed rather to the combination in one man of many gifts, than to the extraordinary development of any single quality. His appearance was commanding, fascinating, and imparted confidence; he had great self-reliance, and a certain amount of egotism, a wonderful capacity for work, and a sense of order which prevented a wasteful expenditure of his forces. Thus gifted, he acquired at an early age a reputation which has been almost unprecedented—patients of all classes, from the prince to the pauper, flocked to his hospital for the benefit of his skill; whilst students from all parts of the world crowded to his clinique to witness his manual dexterity, and learn his teachings.

Died, in London, July 18th, **John Zachariah Laurence**, F. R. C. S., M. D., in the 42d year of his age. He was known in this country as an author as well as a surgeon of promise. He was for a time editor of the Ophthalmic Review, and, with Mr. Moon wrote a "Handy-book of Ophthalmic Surgery." He also wrote a treatise on cancer, to which the Liston gold medal was awarded by the University College.

—— in London, July 12th, **James Copland**, M. D., F. R. S., in the 79th year of his age. Another great name to be added to the list of illustrious dead. Dr. Copland's claim to fame rests mainly on his "Dictionary of Practical Medicine," a great work, which required thirty years to finish. It is a complete *résumé* of all that has been written on the various subjects treated in it, from the earliest days of medicine to modern times, with copious references to all the sources of information. Articles from his pen have appeared in many of the English journals, and at one time he edited the Medical Repository.

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CLINICS.

CLINICAL LECTURE.

Clinical Lecture on the Milk and Whey Treatment and on Health Resorts.—By HERMANN LEBERT, Prof. Clin. Med. in the University of Breslau.

Gentlemen: It is now a very general custom with many patients as a means of effecting a cure to go into the country during the summer months to spend their time on the hills and at the seaside, hoping there to gain health and strength far away from the troubles of their daily occupation. Although many abuses still exist in the application of mineral waters, yet treatment by their means must in many cases be recommended, since it evidently is founded on true hygienic principles.

It must therefore be a part of your medical education that you should make yourselves acquainted with this method of treatment, and consequently during the summer months I gladly embrace the opportunity of making every suitable case available in this respect for your instruction. Lectures on this subject are valuable not only for the benefit of your future practice, but they are also necessary for this reason, that our views on this subject have changed a great deal during the last few years, and they will probably yet undergo still more change.

The time is past in which mineral waters have been regarded as simple units (without reference to their constituents), in which the mysticism of the healing power of the spirits bubbling from the depths of the earth had a particular charm not for laymen only, but also for many practitioners, and when the might of the propitious Naiads within the province of balneology gave rise, not only to large numbers of doggerel verses, but to a still greater quantity of prose writing. Natural philosophy, chemistry, and experience sieved by a process of severe

Published monthly by HENRY C. LEA, No. 706 & 708 Sansom Street, Philadelphia, *for One Dollar a year; also, furnished* GRATUITOUSLY *to all subscribers of the "American Journal of the Medical Sciences," who remit the Annual Subscription, Five Dollars, in advance, in which case both periodicals are sent by mail free of postage.*

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criticism, have at last begun to bear sway even in this department. We have become aware that the ghosts rising from the deep are nothing but aerated water impregnated with salts derived from the soil and rocks through which it has flowed, and from this fact we derive a knowledge of benefit to therapeutics, of the proper relations of solution and chemical combination. Of the gases, again, we know that hydrosulphate gases, for instance, are freed by the decomposition of sulphate of lime or other sulphates, and the bubbling carbonic acid from the carbonated salts, earths, and particularly from carbonate of lime. From a chemical aspect we are better acquainted with the mineral waters than we are with most of our composite medicines; we know that their temperature depends on a definite law, that of the increase of the heat of the earth by one degree Centigrade for every hundred feet in depth, and that their physical condition as regards temperature from the very cold to the hot springs exercises a decided influence on their action.

Concerning the bath, we have learnt that the salts contained in solution are not at all, or but little, absorbed by the skin, and that therefore a direct influence is exercised by the bath only in diseases of the skin or in affections which have communication with the skin by means of fistulous sores, and so on. The unquestionable influence exercised on the nerves of the skin is much weakened by the epidermis, but nevertheless the physical action of the bath becomes quite prominent in the majority of diseases which do not directly concern the surface of the body, and here again temperature plays a most important part; also in douches the degree of concentration and force of the jet and the height from which it falls, and in vapour baths minute atomization and high temperature, etc. If the original therapeutics of the peasant Priesnitz tries to make the patient believe that the pustules and furuncles produced by constant irritation of the skin consequent on unintermittent poulticing are true crises, one does not know whether most to smile at the credulity of the patient or at the charlatanism of such practitioners.

The more hygiene becomes a subject of close and profound investigation, the more does climatology attain to its full and important rights; and, on taking a survey of many and accurate meteorological, physical, geographical, and geological investigations, we find that they afford to the physician many delicate and important points, but they at the same time impress him with a feeling of the responsibility of acting on a strictly critical and scientific basis in respect to such knowledge.

The courses of treatment by milk and whey occupy a prominent position amongst the hygienic courses, which are very often combined with climate and mineral water treatment. These are annually ordered for so large a number of patients that it seems to me very necessary for your future practice that I should give you a clear idea of them; since, on the one hand, according to my conviction, the milk courses, more particularly with respect to the different species of animals which supply the milk, have not yet been sufficiently appreciated, whilst on the other hand the courses of treatment by whey have been very much over-estimated, having attained to such proportions in the watering-places of Silesia as to render the latter rivals to those even of Switzerland. Now, most of our whey health resorts have an advantageous climatic position; their arrangements and the whole mode of life in them are well arranged. The medical advice is mostly derived from full experience; and hence beneficial results in chronic cases cannot be denied. Nevertheless, we must in many cases confidently conclude that the patients have been benefited or cured, not in consequence, but in spite of the whey. Concerning this point, a want of knowledge in natural philosophy and chemistry is felt by many physicians, and this again proves that secular traditions must not be mistaken for verified experience.

I am just publishing an extensive paper on this subject, and I refer you to the same for further information concerning it. To-day I shall try to give you merely an outline of the principal points concerning the composition of milk and whey, and their application in chronic diseases; and I intend to add a few remarks to show that chronic tubercular disease of the lungs in its earlier stages very frequently gets worse in consequence of a prolonged stay of the patient in hospital, whilst much better results may be expected for the poorer classes from health resorts in the country, combining a well planned hygienic system.

Let me first make a few remarks on the chemical nature of milk and whey. If we compare different kinds of milk with reference to their solid constituents, we find that asses' milk is most dilute, containing scarcely 9 per cent. solid matter; next stands human milk, with somewhat over 11 per cent.; next goats' milk with 13½ per cent.; next cows' milk with over 14 per cent.; then sheep's milk containing 16 per cent. (according to an analysis recently made in my laboratory even 18 per cent.); and, lastly, mares' milk, containing 17 per cent. From these facts asses' milk would be applicable in cases where a dilute milk seems desirable. Goats' and cows' milk represent the average quality; sheep's milk would be suitable when that containing a large amount of nourishment is thought necessary, and it is preferable to the rich mares' milk—which in the central parts of Europe is also frequently applied to therapeutic purposes—because it contains a larger quantity of albumen and casein.

Still more important than the total amount of the solid matter is the amount of casein and albumen. Excepting mares' milk, which is excessively poor in this respect, human milk is the poorest, containing only 4 per cent. of casein, whilst cows' milk contains nearly 5 per cent., and more than ½ per cent. albumen. In direct opposition to the latter stands asses' milk, with only 2 per cent. casein and albumen, and for this reason it is beneficially employed in inflammatory chronic diseases, in which the supply of nitrogenous matter must be confined within moderate limits. Goats' milk, with 5⅔ per cent. of casein and albumen, is particularly characterized by its large amount of albumen, which is 1⅓ per cent., and sheep's milk is in this particular again the richest, since of 5⅓ per cent. of casein and albumen, as much as 1⅔ are albumen.

Asses' milk contains also the smallest quantity of butter, whilst cows' and human milk contain 4⅓ per cent., sheep's milk nearly 6 per cent., and goats' milk nearly 7 per cent. Goats' and sheep's milk contain, again, the largest amount of hydrocarbons, and the sheep exhibits the enormous value of the nourishing constituents of its milk by its containing 11¼ per cent. of proteine matters and hydrocarbons.

The milk sugar amounts on the average to 4 per cent. in the cow, goat, and sheep, and to more than 5 per cent. in the ass.

The salts, chlorides of the alkalies, earths, etc., amount to ½ or ⅔ per cent. on the average in different kinds of milk. The large amount of milk-sugar in mares' milk—viz., 8 per cent.—only moderately increases its nutritive value, but renders it prone to alcoholic fermentation, whence arises its manifold application in courses of "Koumyss" treatment amongst Tartaric tribes.—Med. Times and Gaz., Aug 13, 1870.

(*To be continued.*)

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Clinical Lecture on Chronic Phlebitis.

By Frederic C. Skey, F.R.S., Consulting Surgeon to St. Bartholomew's Hospital.

There is a malady not infrequently met with which reaches in its progress to the verge of danger to life, if it does not overstep the line, and which, so far as I know, has not obtained from writers on surgery the full attention it deserves: I mean phlebitis in its chronic form. It is better known as the product of traumatic causes, and when acute in character and progress it is far more intractable than in the form I am about to allude to. In my belief debility is the parent of disease, and you will not meet with chronic phlebitis except in persons either constitutionally weak or reduced to a low level of health by accidental causes. When I use the term "weak," I do not allude to defective capacity of the muscular frame. This system may be the seat of active and vigorous health; the capacity for physical exercise may be great and enduring; while the structures of *organic life* within the body suffer in a far more positive degree from the evils incidental to a weak circulation. These are, in truth, the "vital powers" of the frame, on the vigour and integrity of which the health of the person more critically depends. I think you will find that all cases of chronic phlebitis are accompanied by a weak and generally by a slow pulse, a pulse readily compressible, and in which the contractions of the heart are by many pulsations below the average standard. Unless you note this feature in such cases—presuming it as a rule to be present—you will fail in your treatment, and the disease will gain the ascendant. Chronic phlebitis commences with deep-seated pain in the affected limb, which is generally, but not invariably, the lower extremity. It is commonly ascribed to rheumatism, which it in some respects resembles. It is described as an aching pain of the limb, but it is more persistent than rheumatism; and when its seat is detected it will be observed to hold a relation with the large venous system of the limb. The femoral and popliteal veins are the principal seat, but the disease extends downwards along both posterior and anterior tibial and upwards along the internal saphena veins. All these vessels are hard and firm, and consolidated by coagula within them. The evil to be apprehended is the separation of a portion of this coagulum and its transmission into the pulmonary capillaries of the lungs. In a fatal case of chronic phlebitis I have elsewhere reported this sad result occurred, and death followed in the course of a few hours. The disease frequently attacks the opposite limb. In this case the disease had entirely ceased to exist in the left limb, and was gradually subsiding in the right, after involving the vessels for some four or five weeks. In order to prove the healthy condition of the limb, the patient struck his thigh a smart blow with his hand, in his delight at the approaching termination of his long confinement. This occurred at a late hour in the afternoon; he was shortly afterwards seized with difficult respiration, and he broke out in a profuse sweat, and died within eight hours.

The constitutional treatment of cases of chronic phlebitis should be essentially tonic and stimulating—to an extent, however, regulated by the pulse and the necessary support required by the system. If the tendency to coagulation of the blood in the venous channels be due to defective power in the heart and arterial system, it is clear that stimulants on a very positive scale are essential to recovery. As regards local treatment, a liniment composed of mercurial liniment and extract of opium will be applied along the track of the vessels with advantage, and more effectively if the limb be previously fomented with very hot water for fifteen or twenty minutes, and then carefully bandaged with a flannel roller.—Lancet, August 20th, 1870.

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Clinical Remarks on Wounds into Joints. By Frederick C. Skey, F.R.S., etc.—I wish to address you a few words on the subject of wounds into joints, at all times a serious accident, and, as regards the joint itself, not infrequently a fatal one. In case of doubt as to the joint being involved, it is hardly necessary to say, avoid all exploration. Nature will not permit any intrusion on or violence done to a joint. Peril almost certainly follows. If the joint be opened, and more especially if the wound through the synovial membrane be large or contused, inflammation follows, and the outer wound, which may have shown a disposition to heal, opens. The margins inflame, or at least assume a red colour; and a watery ichor first exudes from the joint, followed by pus. From the wound large and glassy granulations arise, which are eminently characteristic of a wound into a joint. In this condition writers recommend a free incision into the cavity, under the idea that the joint is irretrievably lost. If the discharge of pus diminishes concurrently with increased pain and swelling of the joint, an incision, with a view to dilate the opening, may be advisable, but otherwise I do not think it is, because I am satisfied, from the observation of several cases, that the joint is occasionally perfectly recoverable. I can quote at least three cases in which pus was poured out from the knee-joint—in one of three days' duration, in a second of ten days', and in a third of three weeks'. In each and all these cases the joints were perfectly restored to their natural functions. If this be so, will you not be careful in adopting what I cannot but consider objectionable practice, that of a premature and fatal incision into a joint, which is yet susceptible of cure by natural processes?—Lancet, August 20th, 1870.

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Notes of Clinical Remarks by Sir William Jenner. Hereditary Tendency in Tubercular Phthisis; Question of Paracentesis Thoracis.—The patient, a girl eighteen years of age, was the subject of tubercular phthisis. On reference being made to the history of the case, it was found that both her parents had been affected with phthisis; that her father had died of it; that the only other child of this marriage was a confirmed invalid with cough and chest affection; also that the mother had contracted a second marriage, of which, according to the patient's account, there had been three children, who were all under twelve and healthy. Sir William Jenner said that it would be desirable to ascertain by personal examination the health of these children, because the point involved was one of great interest. He believed that with regard to children both of whose parents are tubercular, the morbid tendency is not only transmitted to them, but intensified in them to a degree exceeding the sum of the tendencies of the parents; and that the intensifying of the tendency under these circumstances occurs equally in cases of insanity and nervous disease in general. On this ground Sir William said he objected to intermarriage, few families being free from a tendency to some disease; therefore, if two members of the same family became married, the tendency latent in them would be intensified in their offspring to the enormous degree already indicated. With regard to tuberculosis, he added that, though he could not give it as an ascertained truth, yet, from his experience at the Ormond Street Hospital for children, he was led to believe that the father transmits the tendency with greater certainty than the mother, in cases where only one parent is affected.

There was also a report of the patient having had pneumothorax whilst in Brompton Hospital, from which she was discharged three months ago.

The chest presented the following physical signs: The left front was obviously larger and deeper from before backwards than the right. and the shoulder and angle of the scapula were elevated; it advanced in inspiration, Sir William Jenner thought, as much as the right. In the left lateral region there was recession of the walls during inspiration, less marked, however, than on the right side. With the exception of the second and third spaces, which receded during inspiration and bulged during expiration, and the first, which only bulged during expiration, the intercostal spaces were not on this side appreciable to the eye. The right front was a little flattened, and the intercostal spaces were depressed, while the heart was seen pulsating under the mamma. Below the nipple the chest walls receded distinctly during inspiration. There was great verticality of the ribs on both sides, especially the left. On percussion were found dulness of the left front, extending to a finger's breadth to the right of the sternum, and dulness of the left lateral region as far downwards as the margin of the thorax, and corresponding in extent to the obliteration of intercostal spaces on the right side; resonance of the supra- and infra-scapular regions, but rather less resonance of the rest of the part than would have been expected, considering the thinness of the patient; the right lateral region, from the axilla downwards, was hyper-resonant. Posteriorly the left back was dull throughout. On auscultation a faint snore was found to accompany the respiratory act before and behind on the left side; and that it was produced there, and not transmitted, Sir William Jenner thought was deducible from the amount of movement which occurred on that side. On the right side were, below the clavicle, blowing breathing, accompanied by a loud jerking snore; lower down a sort of respiratory snore, fading towards the base. The same sounds were audible posteriorly. Vocal fremitus, on the left side, was felt close to the spine, nearly down to the inferior angle of the scapula in the supraspinous fossa, and above, but not below the clavicle. On the right side throughout it was decidedly more distinct than in the left, but faded somewhat from above downwards. The measurements were: right chest under mamma to mid-sternum, 14 inches; left, 14¾ inches; above the mamma, immediately under the angle of the scapula on the right side 13⅞ inches; left 15 inches.

The reported pneumothorax, Sir William Jenner said, had probably been due to diseased tissue having broken down in such a situation as to admit the passage of air into the cavity of the pleura; that the air had been subsequently absorbed, leaving behind it fluid, which had then some time since, by pressure upon the lung, caused its collapse.

Sir William Jenner did not recommend paracentesis for the following reasons. The disease began with pneumothorax, and from the family history of the girl, from her aspect and build, and from the almost invariable connection of pneumothorax with tubercular softening, he had no doubt that she had tubercular disease of the lung, and perforation had resulted from some softened deposit. There were no urgent symptoms to render interference necessary, and no great difficulty of breathing. If the adhesions of the compressed lung were not sufficiently strong, or the lung not covered enough with false membrane to prevent its expansion, when the fluid was let out the opening would probably be re-formed, and active mischief established. Since the temperature was natural, and there were no active symptoms, and the girl was young, it would be better to wait. In time the lung would probably get so condensed that when the fluid was removed the lung would not re-expand, but the chest wall fall in and adapt itself, in some degree at all events, to the small lung.

Frequency of Cardiac Complication in Acute Rheumatism.—A systolic bruit at the apex being observed in a girl twelve years of age, and suffering from acute rheumatism, Sir W. Jenner said that in subjects of that age acute rheumatism, however slight the attack, rarely failed to affect the heart. In the present case the cardiac affection was confined to simple endocarditis. At the time when he was a student it had been held that all deposits in valves were the direct result of endocarditis; since then it had been taught that they were none of them anything more than coagula which had become adherent. The truth, he said, was the still more recent doctrine that the endocarditis having caused probably only a slight roughness of the valve, by a mere mechanical process this roughening whipped out and coagulated the fibrin of the blood.

Mitral Disease and Pulmonary Apoplexy.—Sir William Jenner called attention to the freedom from any tendency to pulmonary apoplexy of patients affected with well-marked mitral regurgitation. He said that, contrary to the opinion of some authorities, neither this nor aortic disease is usually followed by pulmonary apoplexy; while, on the other hand, mitral obstruction almost invariably is. He considered mitral regurgitation to be the least grave, and mitral obstruction the most grave, of valvular diseases of the heart.—Lancet, July 23, 1870.

Obliteration of Varicose Veins.—From some clinical remarks made by Mr. Haynes Walton during a recent visit to the wards, we gather that he is much in favour of tying varicose veins under certain circumstances, and that in his hands the operation has met with such marked success as to justify his favourable opinion of it. Remarking upon this plan of treatment to the students, Mr. Walton pointed out the value of Mr. Gay's researches which have shown that the vein which mainly suffers is not the long saphena, as is usually taught, but rather its smaller tributaries. The operation of ligaturing varicose veins was long thrown into the background by the strong adverse opinion expressed by Sir Benjamin Brodie, in which course he was followed by Key and Lawrence, so that for some years this mode of treatment shared the fate of the valuable operation of lithotrity, which was also by the powerful opposition of Brodie prevented from coming into general use for several years. Both methods of treatment, however, have been very generally revived amongst us of late and Mr. Walton believes that if due discretion be exercised in the selection of cases, and proper caution observed in the performance of the operation, the ligature of varicose veins is as safe and as effectual a proceeding as any remedy which has been proposed. Mr. Walton never operates as long as fair relief is obtained from elastic stockings or bandages. When these means fail, however, the patient is put to bed and kept at rest for a few days, with a cold lotion to the affected leg, and then the swollen vein is obliterated in the usual manner. Much stress is laid on the method of introducing the pin, which must be inserted vertically through the parts by the side of the vein, the point carried well round, and thrust sharply out on the other side. Mr. Walton generally follows the plan suggested by Mr. Henry Lee, of dividing the vein between the points of compression; not with the object of rendering the operation more effectual, but merely to prove that the vein is properly secured and not transfixed, transfixion by a careless operator being the great source of danger in this otherwise highly satisfactory treatment. During the past year Mr. Walton operated on seven of these cases, and each time with a successful result.—Med. Times and Gaz., Aug. 13, 1870.

MEDICAL NEWS.

DOMESTIC INTELLIGENCE.

Treatment of Chancroids By Dr. Chas. C. Shoyer, of Leavenworth, Kansas.—I have been most successful in the treatment of chancroids by the following plan. I apply subnitrate of bismuth as a dusting powder with tannin (but do not think the latter essential) as follows: ℞.—Bismuthi subnit. ℥j; tannin ʒj.—M. S.—Apply night and morning. I also apply an ointment of the same, ʒij bismuth., ℥j adeps, on lint or old linen, to prevent contact of the surfaces. Internally the following: ℞ —Ferri et potass. tart. ʒijss; potass. chlorat. ʒiss; aquæ ℥iv.—M. S.—One half teaspoonful before meals. The worst cases recover in five days. I order the parts washed with soap and water twice a day, and then dusted; afterwards the unguent applied on cloth.

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Case of Malformation, with Tumour in Pelvis. By J. Graham, M. D.

I delivered, June 28th, Mrs S. of a female child which presented the following peculiarities: The hands had each six fingers, and each foot six toes all perfect in shape. The upper jaw had a double row of alveolar processes, and there was a large tumour projecting from the right iliac fossa.

The child had but indifferent health for three months, when it was attacked with diarrhœa which lasted a week. The bowels then suddenly became constipated, and this constipation resisted all remedies for six days, when death occurred.

On post-mortem examination I found a large fluctuating tumour in the right iliac fossa, projecting deep down into the pelvis, and connected by intimate adhesions with the bladder in front, but not communicating with it. This tumour had slight adhesions with the rectum also behind, and pressed upon it, causing obstruction of the bowel.

The tumour weighed 1 lb. 2 oz. Avoir. and was filled with thin, unhealthy, fetid pus.

The child had no womb, and a probe, passed up the vagina to its upper part, entered the bladder.

Mrs. S. has one child living, perfectly formed, and healthy. During her last pregnancy a friend visited her, and mentioned in conversation that she had six toes. Mrs. S. examined the foot, and was astonished at such a wonderful deformity.

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Dislocation of the Hip-Joint of Ninety Days' Standing Successfully Reduced.—Dr. H. H. Kimball, of Minneapolis, Minn., gives (N. W. Med. and Surg. Journal) an account of a case of this which occurred in a girl ten years of age. The head of the femur is stated to have been in the thyroid foramen, and reduction was effected by manipulation.

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Health Restored by the Extraction of Diseased Teeth.—J. H. Hodgkin, D. D. S., of Alexandria, Va., relates (Am. Journ. Dental Sci.) the case of a woman æt. 38, who came to him with distressing pains in the head, impaired sight, and hearing, for the purpose of having the upper teeth extracted, which were badly decayed, being mere stumps. All of the teeth were extracted, with the exception of two, and she was requested to call in about three weeks, when they would probably be in a better condition and her nerves more firm. She called at the time appointed, and expressed herself much gratified, as her troubles were much mitigated, hearing and sight improved, and the distressing pain in the head almost gone. The remaining roots were now removed, and she decided to wait until she could have a permanent set of teeth before having the plate constructed. At the appointed time the patient called to have the artificial teeth constructed, and stated that the restoration of her health was entire, and has continued, a period of two years.

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Absence of the Right Lung.—Dr. W. Dickey relates (Cinn. Lancet and Observer) a case of a phthisical girl, æt. 16, whose left lung was somewhat larger than normal and the right lung entirely wanting, there not being even a segment at the bifurcation.

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Curious Native Plant Incrusted with Sand (Silica) Absorbed by its Roots.—By F. Peyre Porcher M. D., of Charleston, S C.

We observe in a recent number of the "Journal of Applied Chemistry," a brief paper on several plants which contain *silica* in their branches or leaves. We feel sure that we have in this locality one which surpasses, in this respect, all those referred to in the above paper. It is stated there that the mulberry and cherry-tree contain respectively 15.28 and 21 28 per cent. of silica; that the stinging leaves of the nettle are composed of it, and hence that they break into the wound caused by puncture with them. Silica is found in the leaves of the common sunflower and golden rod; also, in the hard bristles and leaves of the elm, hops, and pellitory. We know, also, that it is this which gives hardness to the cane, and two pieces being rubbed together in the dark will, it is said, emit light.

Our attention having been attracted to the large amount of sand found in heaps of pine leaves which had been burned, we are inclined to the belief that this results from the indestructible residue of sand in their composition. The amount of this will surprise those who will be at the pains to examine for themselves.

A plant, however, which grows in the pine lands throughout the lower country of South Carolina, will, we think, be found to contain a larger proportion of silica than any other. The leaves of this little plant are so rough (what the botanists designate as *scabrous*) that it is called the "polishing weed," and it is used as a substitute for sand-paper in polishing horns and cleaning tables and household wood-work. It is known technically as the *Diplopoppus linarifolius*, Hooker, *aster* of Mr. Elliott's sketch, and is not more than a foot in height, with blue flowers, resembling the asters, with which it is closely allied.

A recent examination of these leaves with a microscope of high power discloses a remarkable arrangement. The silica coats the entire leaf as if with a layer of transparent glass, which juts out at intervals into little curved, sharply pointed thorns, which are invisible to the naked eye, and which add to its efficiency as a fine polishing agent. It possesses no known medicinal properties.

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Death from Chloroform.—W. W. L., a young merchant of Chicago, died in that city recently from the effects of chloroform, which was administered by Dr. Beeve, for the purpose of removing a cystic tumour over the left eye. The operation was nearly completed, when Mr. L. suddenly threw back his head, his neck became stiff, and he gasped. Efforts were made to restore him, but without avail. In half an hour he was dead. A coroner's inquest brought in a verdict of death from paralysis of the heart, produced by the inhalation of chloroform.—Brit. Med. and Surg. Journ., Sept. 8th, 1870, from Boston Daily Transcript.

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Private Asylum for Inebriates and Opium Eaters.—An institution of this character has recently been opened at Greenwood, Mass., eight miles from Boston, by Dr. Albert Day, late Principal of the Binghamptom Asylum for Inebriates.

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Inebriate Asylums.—STANLEY HAYNES, M. D., Medical Superintendent of Laverstock House Asylum, near Salisbury, England, in a recent letter to us, states that he desires to obtain full information concerning the Inebriate Asylums of the United States, to learn the legislation in force (with any contemplated amendments), to receive reports of the working of the system with statistics of treatment, and to be fully informed of all particulars in regard to the subject, with the view of aiding in the proposed legislation concerning habitual drunkards in Great Britain.

Those of our readers who can furnish the desired information, will, by doing so, promote a highly laudable and philanthropic purpose.

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OBITUARY RECORD.—Died, in New York, of paralysis, Sept. 5th, 1870, GUNNING S. BEDFORD, M.D., late Professor of Midwifery in University Medical College. Dr. G. enjoyed high reputation as an obstetrician, he was a most popular lecturer, and was well-known abroad as well as at home by his excellent work on Midwifery and other publications.

FOREIGN INTELLIGENCE.

Death from Chloroform.—A case of death from chloroform is reported from Liverpool. The patient, a man of 42, was admitted into the Royal Infirmary suffering from disease of the right foot. An operation was deemed necessary, and chloroform was being administered, when he sank rapidly and died in a few minutes. The post-mortem revealed diseased heart and kidneys.—Med. Times and Gaz., Aug. 20, 1870.

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Smallpox in India; Protective Power of Vaccination.—Dr. ROBERT HARVEY, in a sketch of the late epidemic of smallpox in Bhurtpoor, reprinted from the Indian Medical Gazette, shows, by a long series of facts, the value of the vaccine agent in protecting life and health. The effects of revaccination were strikingly marked in several regiments. With regard to vaccination in general he says: "The whole series of cases goes to show that the protective power of vaccination in our British forces is very strong. In upwards of thirty stations, in most, if not in all, of which cases of smallpox occurred among the general population, and in some of which, as Muttra, the disease was raging furiously, no British soldier was attacked. There was but one case at each of eleven of the twenty-two stations where cases occurred. Delhi, with its 1613 deaths, was one of these. Jullunder, 'where it raged,' another. Umballa, Nowgong, Shahjehanpoor, Dum-Dum, Sealkote, and Peshawur, several of them large garrisons, were others. At Benares, where a very imperfect system of registration recorded 518 deaths among the natives, there were only two cases in the three corps forming the English garrison. At Allahabad, where 403 deaths were registered, where I know the disease to have been severe, and where Dr. Irving says, 'The mortality is evidently very far short of the truth,' there were eight cases and one death in two batteries of artillery and H.M.'s 58th Regiment stationed there."—Med. Times and Gaz., Aug. 20, 1870.

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Milk as a Preservative against Lead Poisoning.—M. DIDIERJEAN communicated, May 10th last, to the Academy of Sciences, a note on this subject. He stated that in his manufactory the workmen in red lead often suffered from lead poisoning in spite of many precautions, such as the use of sulphuric acid lemonade, of which the men soon became tired, attention to cleanliness, frequently working in the open air, etc. Towards the latter end of 1867, his attention was drawn to two workmen long in his employ, and who had never suffered. These two workmen had habitually taken milk at their meals. This led M. D. to recommend milk to the other workmen, and from the month of February he rendered it obligatory on them to do so. After a short time the men were satisfied with the good effects of that drink, and now for more than eighteen months he had not had a single workman affected with lead poisoning.

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Treatment of Lead Colic.—Dr. EULENBURG, in a lecture on lead colic (Med. Times and Gaz., July 9, 1870), states that it is a curious fact, confirmed by the best authorities (Stokes, Bamberger, Niemeyer, and others), that in lead colic no better treatment exists for the obstinate constipation than that by the narcotica, which under other circumstances usually confine the bowels, and more particularly opium. This drug, as well as morphia, must be used boldly and repeatedly in such doses as will produce decided results. A more powerful and rapid action than is produced by the internal administration of narcotics may be derived from the use of hypodermic injection of morphia and opium, by which I have seen the most striking effects produced, especially immediate relief to the tormenting pain and cessation of spasm. Other drugs—as belladonna, hyoscyamus, nux vomica, and nicotine—are more uncertain than opiates. Chloroform may be recommended internally, as well as for inhalation and for embrocation to the abdomen. The same applies to Aran's liquor anæstheticus. For my part, I consider all remedies superfluous, with the exception of opium and morphia. Cases which are not relieved by these two will certainly not be benefited by the others, whilst the reverse of this is often the case. This peculiar mode of action of the narcotics is partly explained by the experiments of Nasse; he finds that opium and strychnia increase by reflexion the irritability of the excito-motor ganglia of the intestines. These latter may thus counteract the effect of the "inhibitory" (hemmende) fibres of the splanchnic nerves, the irritability of which is increased during the paroxysm.

Evacuant medicines are serviceable for the purpose of eliminating lead; they are, however, insufficient for the treatment of constipation during an attack or during a series of attacks. This applies not to the mild aperients only, as senna, sulphate of potash and soda, calomel, and ol. ricini, but to the drastic purgatives also, of which croton oil is most valued. A mixed method of treatment, combining the narcotics and purgatives, has become justly established. The former are most appropriate at first, but when the pain has been removed by them and the first motion passed, more powerful evacuants may then be employed. This plan is more rational than the employment of purgatives at first, and afterwards narcotics, or than the use of both promiscuously.

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Water Dressing.—M. LE FORT recently read an interesting paper at the Academy "On the Employment of Continuous Baths in the Dressing of Wounds." He observes that the great mortality arising after operations in the Paris hospitals is especially due to the occurrence of erysipelas or pyæmia. The liability to these affections not only constitutes a constant danger for the patients, but it interferes with the progress of surgical science; for the surgeon finds himself reduced to act with an amount of prudence and circumspection not called for elsewhere. Under these circumstances the first object must be to diminish as far as possible the number of cases of spontaneous erysipelas or purulent infection, and to prevent the general dissemination in the surgical wards, which such isolated cases may give rise to. Three circumstances may influence this dissemination: the nature of the medium in which the person operated on is placed, the dietetic regimen he is subjected to, and the mode of dressing employed. The great attention which has been paid to hospital hygiene during the last ten years, and the improvement which has taken place in the diet of the patients in the direction of rendering it more tonic and stimulant, have been attended with excellent results. These have diminished the occurrence of spontaneous purulent infection; and it is to the dressing employed that we should look to impede its dissemination, while as regards erysipelas, it may not only prevent its propagation, but even its appearance.

Most surgeons, being now aware of the important part which atmospheric air plays in the propagation of these affections, whether this be explained by any hurtful properties of the air itself, or by its permitting the decomposition of pus and the production of septic matters, are anxious to prevent its gaining access to wounded surfaces. Some, pursuing the same object in a different way, have sought to prevent the absorption of infectious germs by inducing obliteration of the absorbent vessels which exist at the surface of the wound, sometimes by modifying the character of the operation, and at others by covering the surfaces with astringent or even caustic substances. The obliteration of the vessels has been sought by the aid of cauteries, especially galvanic, and by the operation of *écrasement linéaire;* but, after trying an infinite number of applications to wounded surfaces, surgeons now seldom resort to other than simple cerates, which have rather in view preventing the dressing from adhering than that of modifying the character of the wound. Even these are now rejected almost everywhere, except in France; and M. Le Fort attributes a good share of the traumatic erysipelas still met with so frequently in Paris to persistence in this mode of dressing. Various, indeed, have been the endeavours of late years to supersede this. Thus, M. Laugier has employed occlusion by means of goldbeater's skin; but, although access of air may be prevented effectually in small breaches of surface, this is far from being the case in amputation wounds with abundant suppuration. In M. Chassaignac's mode of dressing by occlusion, diachylon forms the basis, and although this is excellent in granulating wounds, M. Le Fort believes that, in quite recent wounds, it may even be a dangerous application, and that it is not unfrequently the point of departure of an attack of erysipelas. M. Guérin's apparatus for "continuous aspiration" is a very effectual means for preventing the contact of air, and the complete removal of pus as it is formed; but although excellent results may be obtained from its use in the treatment of amputation wounds, it is a complicated instrument which is difficult of application. Mayer, Langenbeck, and Vallette have sought to isolate the wound and remove the pus by keeping the stump in a permanent bath of tepid water, and the want of success this plan has met with in Paris has no doubt been in part due to the faulty apparatus employed. Properly used, it furnishes good results in amputations of the leg and forearm, but is of very difficult application, in those of the thigh. The escharotic effects of perchloride of iron, and the coagulation produced by alcohol, have disappointed the hopes once so warmly entertained concerning them—while the water-dressing as employed in England with so much general advantage has its inconveniences. Evaporation takes place in spite of the impermeable covering, especially at the edges, leading to desiccation and adhesion of the dressing, sometimes giving rise to a breach of surface that may be followed by erysipelas. Mr. Lister's antiseptic dressing does not seem to have been attended with the brilliant results once anticipated from it; but, although it does not prevent the spontaneous development of erysipelas, it certainly seems to be possessed of some advantage as regards the propagation of this disease and pyæmia by infection.

The indications, then, that surgeons have in view in the different modes of dressing may be succinctly stated as—the protection of the wound from the contact of air; its modification when possible, by medicinal agents; the maintenance around it of a certain amount of moisture; the prevention of the decomposition of the pus imbibed by the dressings; the keeping the wound in a state of extreme cleanliness; the prevention of the adhesion of the dressings, and the destruction of germs that may give rise to infection. M. Le Fort believes that these ends can be best attained by a slight modification of the water dressings now in use. He entirely proscribes the use of fatty substances, as also as regards recent wounds, of diachylon, and never employs charpie, which by its absorbing power may readily become the receptacle of germs. He covers the wound with one or several compresses, moistened with water mixed with a tenth part of alcohol or spirit of camphor, adding if additional stimulus be required a little sulphate of zinc, hermetically covering the whole with a large piece of oiled silk and some turns of a bandage, so that evaporation is effectually prevented. In this way moisture is retained equivalent in its effects to a continuous bath, without the inconveniences of this or of irrigation. The pus, it is true, remains in contact with the wound, but the experience derived from dressing by occlusion has shown that when it is unchanged such contact is innocuous. This seems so simple a modification of what has been already done, as to hardly justify a special communication, but in the hands of its author it has proved of signal benefit, erysipelas having become nearly extinguished in his wards at the Cochin Hospital, although the wounds there have been very serious. Purulent infection, too, when it has appeared in isolated cases, has been confined to such, and those melancholy series of cases met with in his former practice are no longer found to exist. The great operations, too, have recovered in a remarkable proportion.

"In conclusion," M. Le Fort says, "if this mode of dressing has any influence over the appearance of complications, which are so frequent in some if not all of our Hospitals, it is especially on erysipelas that it is especially exerted. Recalling the time when I officiated at La Charité for my masters, Velpeau and Denonvilliers, when I scarcely dared open an abscess for fear of erysipelas, I am naturally struck with the fact of finding more than two years pass away without a single case of erysipelas being met with, in a ward where a great number of men have been treated for wounds and lesions often of a very grave character. Formerly, when I practised an important operation, such as an amputation, my chief fear was lest purulent infection should supervene. Death was then a perpetual menace, whereas now recovery is the normal issue of active intervention."—Med. Times and Gaz., June 18, 1870.

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A New Antiperiodic.—Dr. LORINSER, of Vienna, gives in the Weiner Medizinische Wochenschrift for May 14th, the results of a number of observations made regarding the effect of a remedy for intermittent fever. The remedy is the tincture of the leaves of the Eucalyptus globulus, a plant of the natural order Myrtaceæ. In 1869, Dr. Lorinser made some experiments, the results of which he published; but he was brought to a standstill by the want of a supply of the medicine. The plant has since been cultivated by Herr Lamatsch, an apothecary; and a sufficient quantity of tincture has been made from the leaves to supply a number of medical men in the districts of the Theiss and Danube, and in the Banat. The records of fifty-three cases of intermittent fever in which the eucalyptus was administered have been communicated to Dr. Lorinser; and he gives very brief outlines of each, with the following summary of the results obtained. Of the fifty-three patients, forty three were completely cured; in five, there was relapse in consequence of a failure of the supply of the tincture of eucalyptus, and quinia had to be employed; two of the cases were not true ague: in one case, neither the eucalyptus nor quinia cured; in one, the medicine (as well as other remedies) was vomited; and in one the patient would not allow the treatment to be continued. In eleven of the cases, quinia had been used without effect; and nine of these were cured by the eucalyptus. There was return of the fever in ten cases, at intervals varying from one to four weeks; in five of these, quinia had to be used in consequence of there being no tincture of eucalyptus, and in the other five the eucalyptus was successfully employed. The tincture is said to be easily made, and to have a pleasant aromatic taste; it acts favourably on the digestive organs. Dr. Lorinser believes that in it we have a valuable remedy for intermittent fever. It may be so; but, considering the comparative failure of the substances which have hitherto been recommended as substitutes for cinchona and quinia, still more extended and careful observation will be necessary before recognizing the claims of the eucalyptus globulus to rank as an antiperiodic on which dependence can be placed. The districts which Dr. Lorinser has chosen for testing the effect of the remedy are, we believe, well fitted for the purpose—intermittent fever being very prevalent in them.—Brit. Med. Journ., May 21st, 1870.

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Injections of Ammonia into the Veins as an Antidote to Snake-poison.—We have always distrusted this boasted discovery of Prof. Halford, knowing how often it occurs that when persons are bitten by venomous animals, a lethal dose of poison is not received into the system, but only enough to cause more or less alarming symptoms, which subside after a time spontaneously, while whatever supposed antidote happens to be administered is credited with the cure.

So far as regards Prof. H.'s antidote the following editorial remarks in the Lancet (May 3d, 1870) seem to be perfectly just.

"He has not adduced a single case in which genuine poisoning seems to have been neutralized, or in which the administration of ammonia by the mouth would not have produced precisely the same effects as its injection into the veins. So far as a tolerably extensive examination of the "literature of the subject" enables us to judge, there is no recorded case of genuine snake-poisoning in which the injection of ammonia into the veins can be credited with any specific action. The experiment has been tried by men of scientific eminence, but cannot yet be said to have succeeded. Prof. Halford has still to square accounts with Dr. Fayrer, of Calcutta, who, after repeated and patient trials, found himself unable to announce to the Government that a remedy (to say nothing of an antidote) for snake-bite has been found."

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New Antiseptic.—Mr. John Gamgee recommends (Lancet, Sept. 3d, 1870) the hydrated chloride of aluminium as possessing extraordinary value as a general antiseptic—"indeed, as a substitute for the very poisonous solutions of chloride of zinc; the caustic carbolic acid, which from its smell cannot serve for many purposes; chloride of lime, which evolves the most unpleasant fumes when used in water-closets or elsewhere; the permanganates, which stain; and sulphurous acid, which cannot be conveniently used in hospitals or in the sick chamber."

This new antiseptic, which Mr. G. terms *chloralum*, is non-poisonous, entirely devoid of unpleasant smell, and may with perfect safety be used for the preservation of edible articles, such as meat, fish, etc.

For ordinary disinfecting purposes solutions varying from 1006 to 1010 specific gravity, are quite strong enough. It is quite harmless to vegetation.

"In the dead house, the dissecting-room, museum, and laboratory, chloralum will be found invaluable."

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Contagiousness of Phthisis.—Hr. Petersen (The Disputed Contagiousness and Inoculability of Pulmonary Consumption and Tuberculosis, Kjöbenhavn, 1869) sums up the results of his inquiries and of his own observations in the following propositions:—

"1. That a contagious origin of some cases of phthisis cannot on sufficient grounds be denied; 2. That phthisis caused by contagion is in general of a very dangerous and inflammatory character; 3. That it must justly be considered hazardous to lie in the non-disinfected bed of a phthisical patient, and to be habitually in too close contact with such a person; 4. That this danger in Denmark seems to be greatest in the warm period of the year."—Brit. and For. Med.-Chir. Rev., July, 1870.

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Tuberculosis and Cancer.—The correlation of these diseases has been for some time past the object of anxious thought on the part of medical men. Facts have so distinctly obtruded themselves on the attention of observers that the mere collection of cases will go far to establish a relationship between tuberculosis and cancer. Among the most intelligent physicians who have clinically studied the subject is Dr. Burdel, of Vierzon, in France. On the 17th of May last he read a paper before the Academy of Medicine of Paris, in which it is stated that the diseases have been observed in more than one hundred families, both by the author and his father, to whose practice he has succeeded. It was found that parents affected with cancer had children who presented the tubercular diathesis. Dr. Burdel's memoir is remarkable, not only for the care with which the statistics were collected, but also for the sober manner in which theorizing is attempted. The facts speak so forcibly that the profession cannot fail to be struck by them. It would be well if one of our societies would next winter appoint a committee to receive reports from medical men all over the country respecting their experience on this important subject.—Lancet, July 16, 1870.

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The Intestines and Abdominal Viscera cut through by the passage of a Railway Train over the body with scarce any injury to the Abdominal Walls.—R. A., æt. 19, was found lying on his back, just inside Euston Station, straight across the outer rail, with his head between the rails, and his hat tilted over his eyes. He was alive when found, but died in a few minutes. The body was at once brought to University College Hospital. It was clothed in a long jacket, waistcoat and trousers of thick coarse cloth, on which the marks of the carriage-wheels were plainly visible. Only a few pence were found in his pockets. There was not the smallest wound on the body, and only a few abrasions of cuticle across the abdomen. After some hours, pretty extensive ecchymoses appeared. On opening the abdomen, all the abdominal muscles were found completely cut through, horizontally, retracted, and curled up, leaving a gap five or six inches wide. The back muscles were in the same condition. The right kidney was cut in half. The transverse colon and a large piece of the ileum were lying free in the abdomen; and the body of the third lumbar vertebra was crushed literally to powder; everything was divided except the skin. The rest of the body was healthy.—Brit. Med. Journ., Aug. 20th, 1870.

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Natural History of Contagia.—Dr. Burdon Sanderson gives, in the report of the Med. Depart. of the Privy Council for 1869, the result thus far of the series of admirable and singularly important microscopic investigations, which he has commenced with the view of making direct studies of the intimate nature and natural history of the contagia. We shall take the opportunity when the time and space permit, of analyzing this part of these Reports more minutely; meantime, we shall allow Mr. Simon to express his view of the value and result in his own well-chosen words.

"Dr. Sanderson's present report does not pretend to be more than introductory in the matter. It discusses generally the ultimate constitution of the contagia; showing experimental reasons, which we think conclusive, for believing that each contagium, as regards its physical form, consists essentially of *extremely minute separate solid particles*; and arguing, on grounds which we think scarcely less certain, that these effective particles of each specific contagium are *living self-multiplying organic forms.* In my annual report of six years ago, when incidentally I had occasion to refer to the intimate nature of morbid infection, I quoted as of extreme interest to that question, the experiments of Professor Schröder and M. Pasteur on the ordinary processes of fermentation and putrefaction; experiments, purporting to connect each specific fermentatory or putrefactive change with the presence and self-multiplication of some characteristic form of microscopical life; but at that time, though I could claim for zymotic pathology the utmost interest in an extension of these experiments, I was obliged to admit that 'the conclusiveness of the experiments, in the field to which hitherto they have been confined, is still matter of the warmest scientific controversy.' It will now be seen that the views indicated in Dr. Sanderson's report with regard to the agencies of morbid infection are (*mutatis mutandis*) the views of Professor Schröder and M. Pasteur on the agencies of fermentation and putrefaction; and I think it will be admitted that the latter views are importantly strengthened by the evidence which M. Chauveau and Dr. Sanderson supply from their other sphere of study, and with experiments of a new and critical kind, as to the essentially particulate form in which the morbid ferments exist and multiply. Professor Hallier's very striking doctrine that contagium-particles, or (as we propose to call them) *microzymes*, are the respective micrococci of certain higher fungic forms which he names, and into which he maintains they can be artificially cultivated, is fully set forth in Dr. Sanderson's report, but has not yet come under our experimental examination. Knowing that all contagia (as such) are distinct one from the other, and believing that each of them has its essence in the so called microzymes which it contains, we by implication impute to the microzymes that in different diseases they are not identical; and as we affirm them to be dynamically different, so also we assume that, under well-devised differential experiments, other signs of their specificity may be brought to light, and for each sort of them a definite genesiology be written. Hitherto, however, no work has been attempted by us but such as is more or less common to all contagia. And the extremely difficult task of devising the differential experiments which may settle this new branch of natural history is among the obligations of the future."—Brit. Med. Journ., Sept. 3, 1870.

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Cigarettes of Cannabis Indica.—The cigarettes of Cannabis Indica, made by Gremault, of Paris, have been found most efficient in the treatment of affections of the organs of respiration and circulation, no less than in affections of the central and peripheral nervous system. The unpleasant effects which so often follow the internal and subcutaneous use of opium and of Cannabis Indica are not produced by the cigarette. Their use is recommended (1) in spinal neuroses, chorea, and epilepsy; (2) in neurosis of the sensory nerves. neuralgia of the teeth, branches of the fifth pair, the sciatic nerves; (3) neuroses of the motor nerves, spasm of the throat air passages; (4) affections of the sympathetic nerves, hysteria, and other diseases not attended with plethora, and congestion of the head, heart, or lungs. They are especially useful in asthma, pertussis, spasm of the stomach and intestinal canal, nervous palpitation of the heart, and exert a quieting influence over the whole nervous system.—Med. Times and Gaz., July 2, 1870, from Allgemeine Med. Zeit.

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Hypodermic Injections.—Hypodermic injections of various kinds are now so frequently used, and the operation appears so superlatively easy, that we are somewhat apt to forget how much the comfort of the patient may depend upon the maker of the instrument used, and upon the manipulation of him who uses it. Whatever form of syringe be employed, good needles and suckers are the first desiderata. Gold and steel needles are used; but we have little hesitation in recording that those made of the latter metal are the best, if very fine and delicately pointed. Only those who have been the subjects of operation with needles of various kinds can properly appreciate the skill of the accomplished workman in this matter. Too much care cannot be employed in the making and fitting of suckers. Strongly acid injections are frequently used, the action of which no suckers will long withstand; and as it is necessary that these suckers should be renewed at frequent intervals, it is also equally necessary that the workmanship should be perfect, so as to insure perfect accuracy as to quantity of injection. The working of the instrument is specially worthy of attention. A faultlessly clean syringe, a very fine and sharp needle, well oiled, are necessary items. The point of the needle should be introduced with the opening downwards, and the piston, whether plain or screw, should be depressed gently and at regular intervals; for the quick and forcible introduction of any fluid under the skin is always irritating, and often very painful indeed. The needle should be withdrawn gently, and without any rotatory movement, and the wound of the skin closed with the finger for a minute or two after the operation. Lancet, Sept. 3d, 1870.

Variations in Maternal Milk.—M. Louis Sourdat has addressed to the French Academy of Sciences an observation on the unequal production and differing composition of the milk from two breasts of the same woman.

Having noticed the very remarkable preference manifested by the infant for the right breast of its mother—a preference shown by two previous children—and having at the same time made the remark that the right breast was much larger than the other, and gave double the quantity of milk, he thought it worth while to make examination of the milk from each. He arrived at the following conclusions:—

1. The composition of the milk produced by the two breasts, taken together, is from day to day very variable, although there be no appreciable change in the state of health. But temporary fatigue, or change of diet, or the keeping of the milk in the breasts, is sufficient to cause this difference. Thus, in analyses, the dried residue varied from 10 to 13.70 per cent. The density was also very variable. He obtained for the mean of the two breasts specific gravities varying from .980 to 1.031.

2. The composition of the milk varied materially in each breast. Thus, that of

the right breast, in addition to being much more plentiful, was also richer in the ratio of 1.20 to 1 for a minimum, to 1.74 to 1 as a maximum.

3. In these conditions the butter was usually secreted in a much greater quantity in the right breast, in the ratio of 1.50 to 1 (minimum), and 9 to 1 (maximum).

4. Azotized substances, such as caseine and albumen, were also secreted in much greater quantity in the right breast, in the proportion of 1.90 to 1.

5. The soluble principles, lactose and salts, were found to be secreted almost equally in each breast.—Med. Press and Circular, Aug. 3, 1870.

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Relapsing Fever in Liverpool.—The epidemic of relapsing fever in Liverpool shows no sign of declension. Indeed, it is said by some of the gentlemen who are engaged more especially in watching it, to be assuming a severer type as well as greater extension.—Med. Times and Gaz., Aug 20, 1870.

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Cæsarean Section after Death of the Mother; Child Saved.—Dr. Beckmann published in the *Berliner Klin. Woch.* of Dec. 20th, 1869, the case of a woman, aged twenty-five, who, in the eighth month of pregnancy, died of apoplexy. With the consent of the husband, the Cæsarean operation was performed within five minutes after the mother's death, and a male child, weighing hardly four pounds, extracted. It was seemingly dead, but by dint of persevering efforts at artificial respiration life was recalled; and by means of breast milk obtained from a neighbour, the boy did well, and has been frequently seen by Dr. Beckmann since March, 1867, when the operation was performed. A similar case has been published by Dr. Ploss in *Monatschr. für Geburt. und Frauenk.* of August, 1869.—Lancet, July 16, 1870.

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Freezing and Ventilating Machine.—The British Med. Journ. (August 27, 1870) contains a notice of a new freezing and ventilating machine, invented by Franz Mulhausen, C. E., of Brunswick, Germany. In the construction of this machine, the cold is produced by the mechanical expansion of atmospheric air. It produces, when in operation, any desired degree of cold, freezes water without the use of any chemical agents, and will effectually cool and ventilate any apartment or building, on whatever scale, large or small. The labour of one man, with a small five-horse motor power machine, will produce 100 pounds of ice an hour, and cool 15,000 cubic feet of air from thirty to fifty degrees below Reaumur. If future trials with this machine should confirm what has been said of it, its value for various sanitary purposes as well as for domestic comfort can hardly be overated.

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Differences of Opinion between Medicol Men less than between Members of the Legal Profession.—Reference is often made by public writers to the conflict of opinion which is commonly found amongst medical witnesses. Lawyers are most apt to refer to this diversity of judgment—rarely in complimentary terms—most often to suggest or to point the conclusion that judgments so divided in their course and so little consistent are of slight weight and deserve little consideration. A barrister furnishes us this week with facts that should modify that opinion, if strict analogy can serve to afford an illustration or to point an argument. The analysis of the decisions of Lord Justice Giffard, sitting alone in appeal cases from January to June, 1870, shows that of forty-one appeals from various courts, the decisions of those courts were affirmed in seventeen cases, reversed in nineteen cases, and varied in five cases. In applying this illustration to the cases of difference of opinion amongst medical experts in courts of justice, it must be remembered that in the great majority of cases to be decided—say 90 per cent. of railway compensation cases—medical opinion is unanimous. And such cases do not come into court. It is only where doubts and difficulties arise that a judicial decision in court is ordinarily asked. The cases of agreement, which are most numerous, are settled out of sight. Moreover, it is only fair to take into account the essential elements of mystery, individual vital differences, and special combinations, which surround each medical case, and obstruct the arrival at certainty. In legal decisions, all the conditions are known, and the principles to be applied are ascertainable. The process is one of pure reasoning, free from conjecture. Yet it does not seem to be productive of complete unanimity in the end.—Brit. Med. Journ,, June 18, 1870.

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The new edition of which was announced in the June number, needs no introduction to our readers. It is pre-eminently *the* text-book. This edition comprises much valuable new matter upon the topics—general anatomy, the development of the ovum and fœtal structures, and a compendious introduction to the study of microscopic anatomy. We scarcely see how the book can be further improved for the student. All else wanting can be furnished only by the scalpel and cadaver.—*Chicago Med. Journal*, July, 1870.

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The wonderful excellence of Gray's Anatomy.—*Cincinnati Lancet*, July, 1870.

This now quite indispensable manual of anatomy.—*California Med. Gazette*, July, 1870.

The anatomy of Mr. Gray is so well known, and so highly appreciated, that the simple announcement of a new edition will probably be all the information the profession need. The work is incomparably the best of its class extant, and no practitioner of surgery or medicine can afford to dispense with it. To refresh one's memory in time of need, its capital illustrations and admirably arranged text make it the best adapted book on anatomy we know of.—*Baltimore Med. Journal*, July, 1870.

As a text-book it leaves nothing to be desired, and we cordially commend it to both student and practitioner as the best work extant upon the subject of which it treats.—*National Med. Journ.*, July, 1870.

It has become the favorite text-book of most American schools—and this is saying much in its favor. One of its chief merits is the application of its demonstrations to Surgery.—*Pacific Med. and Surg. Journ.*, July, 1870.

So well known has Gray's Anatomy become throughout the whole country that it would be superfluous for us to enter into any detailed description of it.—*Cincinnati Med. Repertory*, July, 1870.

The work of Dr. Gray must stand among the first on general anatomy.—*Indiana Med. Journ.*, June, 1870.

This superb volume comes to us in a shape that seems to realize all that could be desired in a work on anatomy. No labor has been spared to make it complete in all particulars. The descriptions are full and complete, the text clear and distinct, the engravings of the first order of merit, and the arrangement of the sections systematic and judicious. This work is so favorably known to the profession, that a detailed statement of its peculiar excellences is unnecessary. No one who desires a complete work on descriptive and surgical anatomy, will fail to procure this book.—*Leavenworth Med. Herald*, July, '70.

Gray's Anatomy has been so long and so favorably known to the student of medicine that we feel it unnecessary to do more than refer to the evident improvements in the new edition. In the first place, we observe that the portion devoted to General Anatomy has been entirely rewritten, and is now presented in the form of an introductory chapter of 113 pages, illustrated by a large number of new engravings, furnishing the student with a clear and admirable introduction to the study of microscopic anatomy. This chapter includes a subject entirely omitted in former editions, viz., the processes of the development of the fœtal state. Altogether it is unquestionably the most complete and serviceable text-book in anatomy that has ever been presented to the student, and forms a striking contrast to the dry and perplexing volumes on the same subject through which their predecessors struggled in days gone by.—*N. Y. Med. Record*, June 15, 1870.

As a whole, this is probably the best text-book on anatomy in our language.—*Chicago Med. Examiner*, June, 1870.

HENRY C. LEA, Philadelphia.

THE MEDICAL NEWS AND LIBRARY.

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CLINICS.

CLINICAL LECTURE.

Clinical Lecture on the Milk and Whey Treatment, and on Health Resorts.—By Dr. HERMAN LEBERT, Prof. of Clin. Med. in the University of Breslau. (Continued from page 147.)

Gentlemen: From the previous remarks it appears that cows' milk is particularly nutritious, containing of 14 per cent. solid matters, nearly 5½ nitrogenous and over 4 per cent. butter. Goats' milk, containing nearly the same total amount of solids, has a smaller quantity of casein, but more than twice the quantity of albumen; this is its principal difference, and perhaps on this depends its decided value in obstinate intestinal catarrhs. Sheep's milk is by far the richest and best constituted, and in addition has a more agreeable taste than goats' milk; its large amount of albumen also causes it to rank before goats' milk; one-sixth of its total weight consists of solids, and more than one-ninth of its total weight (water included) are casein, albumen, and butter; it cannot be doubted that a milk of this composition recommends itself for courses of milk treatment, and it appears almost incredible that up to the present time the whey only of sheep's milk has been employed for therapeutic purposes. In the future the latter will be limited with benefit to the hygiene of chronic diseases of the chest.

In contrast with the sheep's milk stands asses' milk; rich in water, poor in solid matters, with a relatively small quantity of nutritive constituents, easily digested, a mild aperient, it is, according to my lengthened experience, adapted particularly to chronic lung diseases, accompanied by frequent exacerbation, with inclination to continuous fever, and more especially in tuberculous irritation of the lungs without catarrh of the intestines, when it is much more appropriate than whey; for this reason I have maintained for the last ten years that it should always be employed in the watering places of Silesia.

If we consider the composition of whey, we find that the casein has been totally precipitated, the albumen also (if prepared at a high temperature) and the greater portion of the butter. On the average there remain in whey only about 7 per cent.

Published monthly by HENRY C. LEA, No. 706 & 708 Sansom Street, Philadelphia, *for One Dollar a year; also, furnished* GRATUITOUSLY *to all subscribers of the "American Journal of the Medical Sciences," who remit the Annual Subscription, Five Dollars, in advance, in which case both periodicals are sent by mail free of postage.*

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of solids; the proteine and hydrocarbons are reduced to a small proportion, about 1 or 2 per cent., in that prepared without a high temperature. As principal constituents of this watery solution remain 4½ per cent. of milk sugar, and about ⅗ per cent. of salts; the nutritive value of whey is furthermore the less to be taken into consideration, since it is the aim in the preparation of whey to separate the nutritious matters. Milk sugar is no physic; it differs only from other kinds of sugar in its greater insolubility and its readiness to undergo fermentation with the production of lactic acid. Hence the frequent irritation of the stomach and intestinal mucous membrane occurring during a prolonged therapeutical administration of whey.

Of the salts in the milk, part are likewise separated with the casein. The quantity of chloride of sodium in whey is scarcely worth a mention, and the same thing is true of the lime, magnesia, and traces of iron. There remain, therefore, only potassic chloride and free potash, which do not exceed ¼ or ⅓ per cent.; hence the salts become of no importance, particularly if we remember how very much larger a quantity of potash and its salts exist in any article of food, more especially eggs and meat. Nothing is then left in whey which has any therapeutic quality, and nothing of a nutritious kind which is not to be found better and by far more agreeable in different kinds of food. In accordance with this conclusion, I have also learnt by reports from agricultural schools that, in cattle culture, whey is looked upon as of little value, from its scanty supply of nutritive matter and its much too aqueous composition.

Now, one would be very much astonished by the fact that the health resorts in Germany and Switzerland, in which whey is largely employed, are increasing in number year by year, if one could not find an explanation in their being excellent climatic resorts, situated in protected sub-alpine regions, those in the northern district between 1000 and 2000 feet above the level of the sea, the more southern spots about 3000, and those in Engadine 5000 and more.

That, in spite of whey, many patients suffering from chronic chest diseases get better or get cured in such places, observing rest, having amusement, and being well nursed, is quite natural, and it was always to me remarkable that whey treatment has never been favourably regarded nor diffused through France, England, and Italy—in a word, through by far the larger part of Europe.

It is sufficient to read what authors have written on the effects of whey. Some maintain that it has laxative and solvent qualities, others avoid its laxative property, and lay their principal claim to its nutritive (?) quality; others, again, ascribe to the whey a kind of intellectual electicism—to promote normal cell formation, to cause dissolution of abnormal ones and elimination of the same; this contradiction I leave to those who are able to solve it.

Usually the larger doses of whey of 1000 grms. and more are not well tolerated; their only effect in most cases is to relax the bowels, through the quantity of lactose—about 40 grms.—but even this effect is uncertain, and to spoil the appetite. In cases where we intend to produce solvent effects the mineral waters of Homberg or Marienbad, and when we intend to produce a laxative effect the waters of Püllna and Friedrichshall are by far preferable. For the rest, if in cases of chronic diseases of the chest we were to order a small diet in correspondence with the solvent action of the solution of lactose, we should in very many cases do great harm.

Now let me say a few words on milk courses.

Is there in this mode of treatment anything specific against diseases of the chest? By no means; nay, I consider that exclusive treatment by milk without any other food in chronic diseases of the chest, inveterate catarrh, emphysema, bronchiectasis, and tuberculosis, is positively injurious; but if a certain quantity of good and fresh milk be given to such patients morning and evening, in addition to other nutritious and substantial food, in well-situated, sheltered, and well-conducted sub-Alpine health resorts, then this excellent and easily-digested food will very much assist the general hygienic treatment: particularly if the four different kinds of milk are given as the special cases may require it; cows' milk for ordinary use, goats' milk when proclivity to intestinal catarrh exists, sheep's milk when nutrition is much impaired, and the comparativery dilute asses' milk where, in consequence of existing febrile processes, the other more nutritious kinds are not well tolerated, which processes often occur, more particularly in the course of tuberculosis. It is very advisable to protect such patients from frequent colds by the use of the cold sponge-bath. Such persons ought not to remain in these resorts four or six weeks only, as is usually the case, but they should continue there during the whole summer, and we shall even more and more advise them to remain there during autumn and winter, since we know by experience in Engadine and Davost that many patients suffering from disease of the chest bear the Alpine winter much better than that of the south. Of course the efficacy of these elevated health resorts for phthisis during winter is to be more implicitly propounded, and is to be demonstrated in a more strictly scientific manner than has yet been done.

Were I to be asked by medical men what, under these circumstances, becomes of the medical treatment of such patients, my reply is that, in chronic diseases of the chest, an opportunity is very often afforded of interfering by means of medicine in the treatment of symptoms, but that these patients have generally taken already too much medicine during the other part of the year, so that a climatic course of milk treatment during the most pleasant time of the year, with well-arranged hygienic measures, and the avoidance of unnecessary medicinal interference, will afford the greatest benefit to the patient. The medical officer of such a resort must, of course, be acquainted not only with the somatic suffering but likewise with the whole psychological life of the patients suffering from chest diseases.

In conclusion, I again refer to a point which has often been the subject of discussion in our clinical meetings. You have frequently heard me express deep regret that a prolonged stay in the hospital, even with the most careful nursing, is more injurious than beneficial to tuberculous patients. Nay, that even the life of many is directly shortened by breathing hospital air. It is to my mind not for a moment doubtful that health resorts in the country would be of far greater benefit to such patients. It is high time that the country, the nation, and parishes became aware that they have a duty to discharge towards the numerous victims perishing by this disease, duties not hitherto recognized.

A principal idea for the future, according to my conviction, must be to provide health resorts for patients suffering from chest diseases in the country near large cities, in well situated, sheltered, and well-drained spots, in which pleasant walks may be taken in sunny as well as shaded forest paths. All architectural luxury may be dispensed with; hygienic propriety must constitute the main feature. The colonies for mental diseases already existing, the colonies of labouring men more and more guarded by industry and constantly improving in their arrangements, these may be taken, not as patterns, but as points from which to start.

Above all else, large saloons, and the aggregation of large numbers of patients in them must be avoided. It is advisable to have no more than two to four patients in each spacious room, in which every individual ought to have at least double the amount of air which is allotted to them in the usual hospital wards. Good ventilation must be one of the principal points, and the temperature must be regulated in each room by the thermometer being during winter not above 15° R. (65.75 Fahr.), and never below 12 R. (59 Fahr). The attendants of the patients must carefully preserve the utmost cleanliness in the bedding, linen, and closets.

Such residences for patients with chest diseases would most conveniently consist of groups of small houses, and they must not be more than one story high to avoid the ascent of stairs, by which exit into the air would be impeded. The diet should be simple. Milk of good quality must be procured. That of cows and goats will suffice for most cases. If here and there sheep's or asses' milk could be given,it would be better, but these would be difficult to get in such institutions. It would be very beneficial if large cow-sheds could be erected with seats around the walls, in order that those patients who need not be in bed may take their milk in the shed morning and evening, and remain there one or more hours. Attention must be paid to the skin; sponge-baths and friction should be used to lessen the chance of getting cold.

I do not make this proposal that it may serve as a pattern: it is my intention merely to show the possibility of execution of the scheme, that it is by no means Utopian, but capable of realization, provided that every proposition of the kind is not systematically met from its commencement with the stern expression " non possumus," or the milder sounding phrase "we have no money." The large sums which have been spent in the improvement of certain animal tribes are, I dare say, well spent, but it seems to me a far from Utopian notion that the time has arrived in which some improvement in the human race has become necessary, even though it may be connected with what may be considered monetary sacrifice.—Med. Times and Gaz., Aug. 20, 1870.

Clinical Lectures on Air in Wounds.—By Frederic G. Skey, F.R.S., Consulting Surgeon to St. Bartholomew's Hospital.

If I ask a student of surgery the reason why a compound fracture of the large bone of the thigh or leg occupies in its treatment so long a time as compared with that required by a simple fracture, I am almost invariably told, "Because the air gets into the wound." Can this be sound pathology? When the admission of air into the wound is given as the cause of the generally untoward and often serious symptoms that attend this injury, it may not unreasonably be inferred that, if not the sole, it is at all events their prominent cause. But to admit this is to ignore other causes far more probable than the presence of air—viz., the laceration and contusion and disorganization of the structures within. Suppose a healthy man to have sustained a lacerated and contused wound of the outer skin, will it unite by what is termed the first intention? No; the contused margins of the wound, or part of it, will probably slough, and the wound will heal by granulations, and instead of a week or two many weeks will be required, if the wound be large, to complete the healing process. And will not this argument suffice in the case of compound fracture, in which so much injury is done to the soft structures around? Besides, what evidence have we that air is admitted, though it is probable that it may be? and, if admitted, what evidence have we of its mischievous character? Can we reasonably infer that the bubbles of air that occasionally escape from the outer wound, indicating the decomposition of the tissues within, are the residue of the air supposed to be forced in at the moment of the accident? Surely not. If surgeons attach so much importance to the presence of air in compound fracture, why is not some effort made to evacuate it before the fracture is "put up?"

I remember hearing an eminent surgeon, when commenting on this commonly received opinion of the deleterious action of atmospheric air in wounds, assert that, had he undergone the operation for psoas abscess, he would have had the cavity of the abscess distended with air by a pair of bellows! In operations for empyema and hydrothorax, of which I have had a full share, I have never made any attempt to exclude air from the cavity of the chest; and I have published elsewhere one interesting case in which, in conjunction with the late Dr. Todd, we wilfully admitted sufficient air to fill a space previously occupied by six pints of serous fluid. This gentleman had not a bad symptom. In the largest example of emphysema from a broken rib I ever witnessed, the air distended the areolar tissue from the temple to the soles of the feet. It was all gradually removed—I suppose I must say absorbed—in the course of about ten days, except that contained in an enormously distended scrotum, which underwent no change in size, and exhibited no sign of mischief. This I punctured at the expiration of three weeks. A sudden gush of air, having no offensive character, escaped through the canula, and the scrotum fell flaccid; and in two or three days had recovered its ordinary aspect and sensibility. Surely if atmospheric air is so injurious as is often supposed, we should obtain some evidence in favour of this opinion from the results of many forms of large operations: the removal of large tumours, herniæ, lithotomy, amputations, &c. If air be admitted to the interior of the body in such cases, it is doubtless absorbed. And why not, admitting its occasional presence, in compound fracture? With such palpable causes of morbid actions as are furnished by contused and lacerated structures within, which must pursue an indirect path to recovery, I think we may not unreasonably exempt atmospheric air from all participation in the morbid consequences of a compound fracture.—Lancet, Aug. 20, 1870.

MEDICAL NEWS.

DOMESTIC INTELLIGENCE.

New York State Inebriate Asylum.—We are pleased to learn from a circular, recently issued, signed by Professor Willard Parker, M. D., President of the Board of Trustees, that at no time has the prospects for usefulness of the above named institution been more promising, or has it been in so good a condition, so far as the treatment of patients is concerned, as it is now.

It is stated that ample means are provided to meet the physical, intellectual and religious wants of the patients. The Asylum occupies a remarkably healthful and beautiful site. It is furnished with baths, and a great variety of amusements; with a good library and reading-room, which is supplied with the leading daily newspapers and the American and British magazines.

The rules of the Institution require *regularity* in regard to meals—the hours of retiring and rising—and the attendance on the religious exercises of the establishment.

The Asylum has been placed under the charge of Dr. Daniel G. Dodge, a man of superior administrative qualifications, and towards whom there is but one sentiment prevailing with the officers of the Institution and among the patients, that of profound respect for him as a gentleman and confidence in him as a skilful physician.

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The Medical Times.—This excellent semi-monthly periodical made its appearance October 1. It is printed in handsome style, and each number contains 16 double-column quarto pages. In its arrangement it resembles the London weeklies, having departments for clinical lectures, original essays, hospital reports, editorials, book notices, transactions of societies, summary of the advancement of medical science, &c. The announced list of contributors contains many of the names most distinguished in American medical literature. It affords us pleasure to extend a cordial welcome to "The Medical Times," and we hope that it will achieve the success which its first numbers indicate it merits.

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Philadelphia Hospital, Blockley.—Dr. Harrison Allen has been elected one of the attending surgeons to this institution, vice R. J. Levis, M. D., resigned.

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Albany Medical College.—An official denial has appeared of the slanderous statement recently circulated that this school had affiliated with homœopathy. The high standing of the professors should have prevented currency being given to so dubious a report, and that on the authority too of merely an anonymous newspaper correspondent.

FOREIGN INTELLIGENCE.

Hydrochlorate of Quinia in Hooping-Cough.—Dr. Briedenbach calls attention to the benefit that may be derived from this remedy in hooping-cough when other means have failed. It has already been recommended by Binz. It requires to be administered in comparatively large doses. To a child of three weeks, Dr. Briedenbach gave a grain and a half per diem; and to one of eight years as much as fifteen grains per diem. The improvement was in general speedily manifest; and no ill effects were observed, nor was it ever necessary to diminish the dose. In one severe case the violence and frequency of the attacks abated within forty-eight hours; and a subconjunctival ecchymosis, that had previously been persistent, showed symptoms of absorption.—Lancet, Sept. 24, 1870.

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Hydrate of Chloral in Cerebro-Spinal Meningitis.—Mr. J. B. Chagnon relates (Canada Med. Journ., Sept. 1870) a case of cerebro-spinal meningitis successfully treated by chloral hydrate, and states he believes this medicine "has never been administered before in this disease." By referring to the number of this Journal for August last, p. 120, he will find that Dr. A. Patton, of Vincennes, Ind., had previously employed it, and reported very favourably of its effects.

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Ipecacuanha Cultivation in India.—It is stated in "Nature" that there has been a good report made of the progress of ipecacuanha culture in India, where it is found so valuable in that prevalent disease, dysentery.

It will be remembered, that ipecacuanha was introduced into Europe more than two centuries ago, as a remedy for dysentery, and that Helvetius subsequently employed it as a nostrum, and having cured by it the dauphin and several distinguished persons of the court who were troubled, with dysentery, he sold his secret to Louis XIV. for one thousand Louis d'or. Baglivi says: "The root of ipecacuanha is a specific and a remedy almost infallible in the dysenteric fluxes." It has been used with success by a large number of British practitioners in India, and its value is generally recognized. For a full account of this article, see the excellent history of it given by Dr. Stillé in his "Therapeutics and Mat. Med.," third ed. vol. ii. p. 388, also Waring's "Practical Therapeutics," p. 389, the Nos. of the "Am. Journ. of the Med. Sci.," for Oct. 1860, p. 381; Oct. 1861, p. 550; and July, 1862, p. 231; and the Reports of British Army Surgeons in India.

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Tetanus treated by Woorali, Calabar Bean, and Chloral Hydrate.—Mr. Lawson Tait records (Lancet, Oct. 1, 1870) three cases of traumatic tetanus; the first treated by woorali, the second by Calabar bean, and the third by chloral hydrate. He very justly remarks that "perhaps there is no disease about which men rush more ardently into print than tetanus; a single case often constitutes a paper, and from it other practitioners are led to use the vaunted remedy, only to meet with disappointment, and few record it. It has been my misfortune to see a good deal of tetanus, and I have tried many remedies, but always with the same result. If the patient lives over the twelfth day of the disease he is almost certain to recover, whatever be the treatment. The acute cases terminate in from twenty-four hours to three days, and nothing seems to help them in the least; except perhaps that chloral hydrate gives them an easier death than they have without it. The last three cases of acute tetanus which I have seen I have treated severally by woorali, Calabar bean, and chloral hydrate. The results have been unsatisfactory as usual, and in the first case (treated by woorali) I believe that death was, if anything, hastened by the treatment. In these cases elaborate notes were taken of the temperature, pulse, &c.; but as they reveal nothing not already well known, they are omitted."

"In these cases," he adds, "it cannot be said that the treatment was of the slightest use, except that in the last case the chloral saved much suffering both to the patient and his friends. This could be formerly done with chloroform, but with much more trouble, and with no more satisfactory result. I fear that even chloral is not to prove of the value in the treatment of this terrible disease which some of the members of the French Academy recently predicted for it. The other two drugs are still more useless."

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Interesting Autopsy of a Case of Fracture of Neck of Femur caused by attempted Reduction of Dislocation of that Bone.—Attempts at reduction were made, thirty hours after the accident, upon an old man suffering from luxation of the head of the femur above the pubes. As ordinary parallel traction and the rotatory method had failed, the patient was stretched on the ground, in order that circumduction and moderate traction might be carried out. Although M. Verneuil was unaided in his efforts, the neck of the femur snapped at the very outset of this manœuvre. The head of the bone, however, remained fixed. The patient died four years afterwards, at the Asylum for Aged People. On examination it was found that the caput femoris was quite isolated from the shaft by a fracture situated at the junction of the neck and the trochanters; and that it rested on the notch between the anterior superior spinous process of the ilium and the ilio-pectineal eminence. The head of the bone was strangulated by a loop formed externally by the tendon of the rectus femoris, and internally by the psoas. The tractions which had been made had, of course, a tendency to tighten the loop.—Lancet, Aug. 20, 1870.

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Animal Vaccination.—The report on this subject by Dr. Seaton, contained in the twelfth Privy Council Medical Report, is, as the very name of its author insures, a most complete and careful document. For the sake of the many and manifest advantages that would seem likely to accrue from the system, we regret to record that Dr. Seaton's testimony is entirely condemnatory of its employment. He finds that the degree of success attending the practice of animal vaccination is low, and such as to constitute a serious drawback to its use; while much training and practice are required before even that low degree of success can be secured. He therefore believes that its general introduction could not fail to cause the presence in the community of a large and constantly increasing number of unprotected or imperfectly protected persons, and thus to become a source of extensive and fatal epidemics of smallpox.—Lancet, Aug. 20, 1870.

The experience in Paris during the recent epidemic of smallpox there, is to the same purport.

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Phosphate of Lime.—A book has lately been published in Paris, by M. DUSART, on the physiological and therapeutical properties of phosphate of lime. The author maintains, after numerous experiments in the animal kingdom, that this salt is the natural exciting agent in the functions of nutrition; that it induces the albuminoid matter to assume the cellular shape; and that it controls the formation of tissues. In short, according to M. Dusart, phosphate of lime is eminently an agent of nutrition. This view holds good, also, in respect of the vegetable kingdom; and the author asserts that the salt in question is concentrated in the leaf bud, but is almost absent from the fully developed leaf, so as to become concentrated in the seed preparing for the ultimate development of the embryo. M. Dusart points out that the phosphate of lime is always conjoined with nitrogenous matter in plants; and that the relative proportion of the salt and the nitrogen is always identical, wherever they are met with. In animals the same phenomenon takes place; and when they are made to feed much upon the phosphate, they absorb more food, and increase rapidly in weight, owing to the transformation of the albuminoid matter contained in the food into muscular fibre.—Lancet, July 23, 1870.

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Diagnosis of Insanity.—An inquest was recently held at Louth, in Lincolnshire, on the body of an old man who had committed suicide, and the question was raised as to whether his mental condition for some time previously had not been such as would have justified the medical officer of the district in giving a certificate for sending the man to an asylum, whereby his death might have been averted. The coroner, however, took a proper view of the case, and pointed out that the penalties of the law were so severe for pronouncing a person insane without sufficient grounds, that a medical man was not justified in signing a certificate of lunacy without the most positive evidence of the fact.—Lancet, Oct. 1, 1870.

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Adhesions in attempted Ovariotomy.—When an ovariotomist finds, after his abdominal incision, and the evacuation of the contents of the cyst, that the latter is completely adherent to the parts around, he generally closes the wound, and leaves the operation unfinished. Not so Dr. Jouon, Professor at the Medical School at Nantes, in France. Being called upon to perform ovariotomy upon a married woman of twenty-nine, he observed after his incision from below the umbilicus to the pubes, and the puncturing of the cyst, that the adhesions were so tight that the sac could not be isolated. The idea of actual ovariotomy was then given up, and the case treated as one of artificial anus. The margins of the wound were secured against the cyst, and a tent passed into the latter. The patient had a fearful reaction; but by dint of attentive care, and the syringing of the cyst, first with alcohol and water, and afterwards with tincture of iodine, with appropriate narcotic and tonic remedies, the woman was quite restored in a little less than four months.—Lancet, July 23, 1870.

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The Liver the Seat of Formation of Urea.—The latest researches upon the place of origin of urea, and especially the beautiful experiments of M. Gréhant, have demonstrated that the kidneys are by no means secretory, but purely excretory, organs for urea. Dr. Cyon, in the last number of the "Centralblatt," publishes a few facts in the form of a provisional communication, to show that it is probably produced at the liver. The plan of experimentation adopted (in common with M. Istomin) was as follows: The whole of the blood was abstracted from the carotid of a dog, and a portion, after being defibrinated, was transmitted by means of mercurial pressure through the liver. Coincidently three canulæ were introduced—one into the inferior vena cava, the second into the hepatic artery, and the third into the vena porta. The results of careful analysis showed that the blood which had passed through the liver contained a much larger proportion of urea than ordinary arterial blood. In one experiment 100 c. c. of the arterial blood when defibrinated contained 0.08 grammes of urea; but after having been passed four times through the liver, the same quantity contained 0.176 grammes.—Lancet, Oct. 1, 1870.

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The text of previous editions has been compressed, and portions omitted, especially when relating to subjects now fully established and no longer controversial; yet the size of the present volume is increased by sixty-four pages.

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The editor has spared no pains to render it suited in every respect to the wants of the American student, with which long experience in teaching practical anatomy has rendered him familiar. The arrangement has been somewhat altered to adapt it to the course usually followed in dissecting rooms in this country, and all the latest investigations and discoveries in anatomy have been carefully introduced. An Appendix has likewise been added, containing directions for the preservation of subjects and for making permanent preparations. The work is therefore commended to the favorable attention of teachers and students of anatomy.

HENRY C. LEA, Philadelphia.

THE MEDICAL NEWS AND LIBRARY.

VOL. XXVIII. DECEMBER, 1870. No. 336.

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CLINICS.

CLINICAL LECTURE.

Clinical Lecture on Refracture of Bones. By Frederic C. Skey, F.R.S., Consulting Surgeon to St. Bartholomew's Hospital.

I know of few better examples of sound effective surgery than results from the successful treatment of a case of a distorted and contracted limb, by reason of the malunion of a broken bone by its refracture. In the case of a broken femur, for example, it not unfrequently occurs that, whether owing to imperfect extension, to a restless disposition on the part of the patient, or a discontented character of mind, which impels him to regulate the pressure of the splints in accordance with his own sensations, and especially in cases of a very oblique fracture, the bones may permanently overlap, and an angle is frequently formed at the point of union. In proportion to the shortening of the limb is the gait impaired, and the muscles are reduced in contractile power. In such cases the bone may be refractured with perfect safety. Do not suppose that the capability to employ the limb in walking is any evidence of your inability to break it. In a case of simple oblique fracture of the femur, or of the bones of the leg, the patient may be capable of walking—that is, of throwing the entire weight of his body on the affected limb in the course of seven or eight weeks; but the weight being vertical, the uniting tissues are firm enough to sustain the superincumbent weight; but if force be applied in a lateral direction, the union will readily separate for many weeks afterwards. I have broken the femur at the expiration of eleven weeks, and the bones of the forearm at that of seventeen.

Two important questions arise in connection with this subject:—

1. Will the bone thus broken again reunite? Why should it not? If Nature has firmly united the broken bone in the first instance, why should she not in the second? The power of uniting a broken bone is inherent in every sound constitution. The very fact of primary union infers the presence of ossific power.

The second objection which has been raised is the uncertainty of separating the bones at the point of fracture. This is a frivolous objection. If a man of good mus-

Published monthly by HENRY C. LEA, No. 706 & 708 Sansom Street, Philadelphia, *for One Dollar a year; also, furnished* GRATUITOUSLY *to all subscribers of the "American Journal of the Medical Sciences," who remit the Annual Subscription, Five Dollars, in advance, in which case both periodicals are sent by mail free of postage.*

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cular power fails with his greatest effort to break even a radius in the dried state, how can the shaft of the femur be broken by the muscular power of the human arm?

Granted (1) the impracticability of fracturing a living bone of the smallest calibre for which the operation of refracture can be required; (2) the all but certainty of reunion; (3) the simple and innocuous nature of the operation as regards the soft structures; and (4), the perfect safety of the shaft of the bone. What objection can be urged against an operation which contemplates removal of a serious evil to the frame without suffering or inconvenience? The only limit to time is the power to break. I made a vigorous attempt to break the femur at ten months. In this I failed, but the man walked back to his ward without pain or difficulty. Chloroform having been administered, the limb is brought to the edge of the table, which is covered with half a dozen folds of a blanket. The weight of the body of the operator is brought slowly and gradually to bear on the point of fracture; and any additional force in moderation may be resorted to. The separation will be audible to bystanders, and when the rotation of the lower fragment proves the entire separation of the fractured ends, the movements should be freely made with a view to detach all the fibrous adhesions yet connecting them. The sensation to the surgeon manipulating is not that allied to crepitus. The impression conveyed to the hand has nothing of the crispness caused by a recent fracture, but rather like the laceration of soft or fibro-cartilaginous substance yielding under continuous pressure. Pulleys very deliberately applied are requisite to overcome the long-continued contraction of the muscles. The artery has been abnormally shortened, and will rejoice in its restoration.—Lancet, Sept. 17th, 1870.

HOSPITAL NOTES AND GLEANINGS.

University College Hospital.—On the 23d September we visited this hospital with Mr. Christopher Heath, who, during the absence of Mr. Erichsen and Sir Henry Thompson, has the charge of their wards, and saw, among others, the following interesting cases:—

Two cases of skin transplantation of a fortnight's standing. One was that of a woman who had undergone amputation of a carcinomatous breast, involving considerable loss of skin; the other a man suffering from severe eczema of the leg, which about the middle third had resulted in a large and obstinate ulcer. In both instances the result was very satisfactory, but especially in the latter, where the transplanted centres had been placed in a rather unpromising soil, and had expanded into circles of about the size of a sixpenny piece.

A case of extensive ulceration of the integuments of the leg in a child. The ulceration had the appearance and character of a tertiary affection, and Mr. Heath believed it to be the result of a hereditary taint. He put the patient under iodide of iron with local mercurial treatment, and held out great hopes of a favourable result.

An obstinate case of urethral stricture, which had been for a considerable time under treatment in one of the West India islands, and was at last sent to England to be placed under Mr. Heath's care. A No. 3 catheter had been introduced under chloroform at a previous visit, and now Mr. Heath introduced a Holt's dilator, and subsequently drew off the water with a No. 10 catheter, which was introduced without much difficulty. The patient was ordered to be kept warm, and to take an immediate dose of twenty drops of laudanum.

In the same ward Mr. Heath pointed out a splint, recently introduced from Germany. It is easily made, and forms an efficient substitute for the expensive and troublesome leather splint. It is made as follows: a piece of flannel folded into a double layer is laid underneath the leg; by gathering it up on either side, so as to make its edges meet over the crest of the tibia, and the dorsum of the foot, and cutting off what is superfluous, it is adapted to the shape of the parts. The same is accomplished for the foot-piece by cutting out the fold which results from bringing together over the middle line of the sole the opposite sides of the end of the flannel. Then, as a guide to the next step, a line is drawn in continuation of the middle line of the sole, along the under surface of the leg, and through the part corresponding to the centre of the popliteal space. Next, the flannel being removed, the two layers are united by two lines of stitching, about a quarter of an inch apart, and one on either side of the guiding line. The flannel is then accurately replaced, and the layer adjacent to the skin pinned in position, while the outer one is allowed to drop and hang from the double row of stitches on the under surface. The outer surface of the inner layer having been spread with plaster of Paris to a depth of about two lines, the other layer is brought up on either side of the leg and foot, and accurately adjusted to the first, to which it soon becomes adherent, while the entire structure sets into a firm and solid splint. It admits of no eversion at the edges, and the coherence conferred by the texture of the flannel counteracts the brittleness and the tendency to crack spontaneously, which are liable to give trouble with plaster of Paris as usually applied. The splint can be maintained in position by bandages and strapping. The thin line of flannel, which has been kept free from plaster by the double row of stitches, and preserves its pliancy, forms a hinge, which enables the splint to be removed and adjusted as often as occasion may require.

In another ward Mr. Heath passed the lithotrite twice into the bladder of an old man—a patient of Sir Henry Thompson—each time crushing several fragments, and bringing away between the blades of the instrument a quantity of finely-crushed stone. He also drew special attention to a man who was the subject of an enormous malignant growth, involving the neck, cheek, and lower jaw on the right side, and presenting a considerable ulcerating surface. A few minutes later a flow of blood came from the patient's mouth, which was traced to a fungoid projection from the right tonsil, apparently due to the invasion of part of the malignant growth. The hemorrhage was ultimately arrested by swabbing the part with perchloride of iron, by means of a sponge fastened to a small stick for a handle, but not until more than a pint of blood had been lost. Mr. Heath explained that the disease had reached a stage at which surgical interference of any kind, including ligature of the carotid artery, would be quite unavailing to stay its progress or alleviate the patient's sufferings.

The last case we notice was one of great interest. The patient, a youth of about twenty years of age, had been admitted a few days previously complaining of pain and tenderness in the right hypogastrium and diarrhœa. He was said to be suffering from perityphlitis. We found him pale and somewhat wasted; the abdomen was rather tense, though not notably distended, and at about a third of the distance from the anterior superior spine of the ilium to the linea alba presented a red, fluctuating, and slightly prominent "point," which unmistakably indicated the presence of subjacent pus, for the discharge of which Mr. Heath decided on making a small incision. As the patient exhibited considerable nervous apprehension, nitrous oxide gas was previously administered. The instant the incision was made, a forcible stream of offensive pus spurted out. When about a pint had been discharged, the opening became plugged by what, on drawing it out, proved to be a slough, apparently of cellular tissue, about five inches in length; but no sooner was this withdrawn than there followed a copious stream of venous blood. Digital pressure was immediately applied to the tissues adjacent to the incision, with the result of arresting the flow; and the patient was placed under chloroform. Mr. Heath, failing to discover the source of the hemorrhage in the lips of the wound or any other attainable part, enlarged the incision, and, having rapidly withdrawn several large handfuls of clot from between the abdominal wall and the parietal peritoneum, applied sponges, with the only result that the blood welled up from some undiscoverable spot and rapidly refilled the cavity. At last, every attempt to discover the seat of the hemorrhage having failed, and as the patient was beginning to show signs of exhaustion, a large quantity of broad shreds of lint, soaked in solution of perchloride of iron, was stowed into the cavity; this immediately arrested the flow of blood. Mr. Heath said that probably the withdrawal of the support afforded by the large accumulation of pus had determined the giving way of a vein whose coats had been disorganized by the adjoining suppurative process. Three days later the patient was still alive, and had passed some feces through the wound. We shall have occasion to refer again to this case.

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Ulcers of the Legs.—Mr. MAUNDER, at his clinic (London Hospital), in some remarks upon ulcers of the legs, drew attention to the frequent occurrence of tertiary syphilitic sores about one or both knees, and stated that—one or more sores situated above the middle of the leg, and arising without any apparent cause, was almost certainly syphilitic, and would be rapidly cured by iodide of potassium—while, although this variety of sore is found on any part of the extremity, varicose and chronic ulcers are always found below the middle of the leg. Even the statement that a sore followed a blow must not lead one to believe that the case is unconnected with syphilis; as one of the patients then shown was the subject of two sores on the knee, one occupying the site of a wound, and the other of spontaneous origin. He also called to mind instances of a lacerated wound of the cheek taking on tertiary ulceration, and of a lacerated wound of the thigh having a similar aspect. All three were healed quickly under the influence of iodide of potassium. He then illustrated by two cases that a blow short of wounding will lead to cellular nodes and tertiary ulceration sometimes.

Sometimes there is no history of syphilis to confirm the diagnosis, or it is inexpedient to inquire too closely; and then the position of the sore; its indolent aspect—perhaps having a slough in the centre, either devoid of granulations, or these latter large and flabby; the edges of the wound irregular, undermined, and boggy; with a dull red-bluish areola; the statement that there was a swelling in the part for weeks or months before it broke; all these conditions conjoined at once put aside the question of chronic ulcer, boil, or carbuncle. The treatment consists in due attention to the general health of the patient, and especially in the administration of five grains of iodide of potassium, increased gradually, sometimes, to thirty grains thrice daily. The drug often acts like a charm, and the character of the sore begins at once to alter for the better.—Med. Times and Gaz., Oct. 22, 1870.

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Skin Grafting.—This operation, it would appear from our recent journals, has been pretty frequently resorted to, of late, in the London hospitals.

Mr. Mason has performed it at the Westminster Hospital in nine instances, it is stated in the "Lancet," (Oct. 22, 1870).

The first was that of a girl with a cicatrix of a burn in the neck, of which a separate and detailed account will be given on another occasion.

The second was that of a woman who for three years had had an ulcer on the leg, measuring about four inches by three. Three pieces of skin, of the size of a canary seed, were snipped from the front of the upper arm, and simply placed on the ulcer, and retained in position by means of a strip of transparent plaster, made by Ewen of Jermyn Street, and over this water-dressing and a bandage were applied. At the end of a month the ulcer had nearly healed, each of these pieces having in a fortnight attained the size of a fourpenny-piece.

The third case was that of a man with a flabby-looking ulcer, as large as the hand, situated in the groin. Four small pieces from the front of the upper arm were grafted. Three failed to grow, and the fourth, after one month, was only of the size of a pea.

The fourth subject was a woman with an unhealthy ulcer of the leg, extending nearly all round the limb. Four pieces were grafted, and they all failed to grow.

The fifth, a woman, with an ulcer of the leg, of four years' standing, and two by three inches in size. Two pieces of skin were grafted, and in three weeks measured each a quarter of an inch in diameter.

The sixth, a man of middle age, with an ulcer, of the leg, four by three inches in size, of nearly four years' standing, which was sloughing at the time of admission. Charcoal and linseed poultices were first applied, and the wound soon showed fairly healthy granulations, on which four pieces were grafted; and on the strips being removed four days later, they were all found to have adhered. When seen eleven days after the operation, they were spreading rapidly.

The seventh, a girl, aged twenty, with a flabby ulcer on the thigh, of eight months' standing. Two pieces were grafted with good result.

In the eighth and ninth cases there were smaller ulcers, in which one piece only was grafted. They rapidly recovered.

Mr. Mason, without committing himself to a decided opinion on this interesting operation, believes that its success depends on the ulcer being, if not in a healing condition, at least of a healthy character. He had understood from Mr. Pollock, who first showed him the operation, that the grafted portions often disappeared for a time, and were, as it were, reproduced in the course of a few days Mr. Mason has never noticed this phenomenon. In his successful cases the grafted pieces have, on the contrary, never faded away or diminished. but remained centres of centrifugally spreading growth. They have in some instances assumed, in the course of a few days, a cupped or depressed appearance, as if a kind of very superficial ulceration were proceeding; but they have ultimately filled up again. and the process of healing has proceeded. The pieces of skin have only disappeared in cases where they have perished. The situations most favourable for this procedure are, Mr. Mason thinks, those where—as in the case of ulcers of the leg—pressure can be readily applied, so as to keep the grafted skin permanently fixed for three or four days.

Perhaps the difference between the results of Mr. Mason's experiments and those of other operators, as to the disappearance of the transplanted skin, may be accounted for by the rather larger size of the portions (picked up in an ordinary dressing forceps) which he cuts off.

MEDICAL NEWS.

DOMESTIC INTELLIGENCE.

Treatment of Cancrum Oris.—Dr. W. S. Edgar, of St. Louis, Mo., invites attention (St. Louis Med. and Surg. Journal, Sept. 1870) to the prophylactic treatment as all important in this disease. When small points of ulceration are discovered on the gums and inner surface of the lips and cheeks, and the face or gums begin to swell, and the mucous membrane becomes puffy and shining around the ulcers, the danger is imminent, and the patient should at once be put on nutritious diet, tonics, and change of air when practicable. Among the ferruginous preparations the liquor ferri iodidi is preferred in these cases, and it should be given, particularly in malarial regions, alternately with the citrate of iron and quinia. The local treatment is no less important. Thorough cleansing of the ulcers and mouth twice a day with the nebulizer, using a weak solution of the chloride of sodium or chlorate of potassa; also the permanganate of potassa to correct the offensive odour of the mouth and stimulate healthy granulation. If any escharotic is indicated, a strong solution of sulphate of copper, xxx grs. to the ounce of water, or paste of permanganate of potassa is preferred to the mineral acids as less painful and less likely to extend beyond the point desired.

Rapid Dilatation of the Female Urethra in Cases of Stone.—Dr. Alan P. Smith records in the Baltimore Medical Journal (July, 1870) three cases in which he was successful in removing calculi by rapid dilatation of the urethra, which procedure, he claims, is a safe and easy method for accomplishing the object. The operation is performed as follows: A pair of dressing forceps, with narrow round blades, are inserted into the urethra, which is then to be gradually dilated by the separation of the blades until the orifice of the canal will receive the extremity of the index finger. This is afterwards to be used as the dilating power. In his first case, a girl æt. seven years, the finger passed freely into the bladder in less than five minutes. When the stone is too large to be passed entire, it should be broken and the fragments extracted, as was done in this case, and in six weeks the patient had entirely recovered. In his second case, æt. 23, and third case, æt. 22, the patients recovered in two months and four days respectively. In all of these cases the hemorrhage was slight.

Death from Chloroform.—A woman, while undergoing an amputation of the foot, by Dr. Dawson, at the Cincinnati Hospital, within a few days, suddenly died from the effects of the chloroform administered. At the coroner's inquest, Professor Taylor, who had made an autopsy, stated that there was slight fatty degeneration of the heart, but not sufficient to fully account for the death. The amount of chloroform administered was stated to have been not more than two drachms. The verdict of the jury exculpated the medical attendants of all blame of carelessness or unskilful use of the anæsthetic.—Cincinnati Med. Repertory, Nov. 1870.

Library of the College of Physicians of Philadelphia.—We are pleased to learn that this valuable library continues to rapidly increase. The number of volumes added during the past year was nearly 800—making the whole number at present in the library 15,000, exclusive of duplicates.

Photographic Review of Medicine and Surgery.—The first number of this bimonthly journal, under the editorship of Drs. F. F. Maury and L. A. Duhring, of Philadelphia, has just been issued, and contains four beautifully executed photographs with ten pages of text. The photographs illustrate, respectively, a case of Multilocular Tumour contributed by Dr. S. D. Gross; of Meningocele, by Dr. D. Hayes Agnew; of Horny Tumour, by Dr. Wm. H. Pancoast, and of Keloid Tumour, by Dr. F. F. Maury. The typography of the "Photographic Review" is all that could be desired, and we hope that it will meet with such encouragement from the profession as will insure the permanency of the enterprise.

The Physician's Visiting List—This annual, which has now regularly appeared for twenty years, has been issued for the year 1871 by its publishers, Messrs. Lindsay and Blakiston. Its utility is so generally known that it is sufficient to merely announce its publication.

FOREIGN INTELLIGENCE.

Death from Chloroform.—Dr. Hughes Bennett stated at the last meeting of the British Association that "he knew of one very sad case that had happened in Edinburgh. A young and beautiful lady, daughter of a barrister, in perfect health, went to a dentist's house one morning and had a tooth extracted. Five minutes afterwards she was dead. That was only one of many similar cases that had occurred, but had never been published."—Brit. Med. Journ., Oct. 1, 1870.

Bromide of Ammonium in the treatment of Menorrhagia.—Dr. W. W. Ogden extols (The Dominion Med. Journ., June, 1870) the value of bromide of ammonium in "the excessive discharge of blood from the uterus at or about the menstrual period continuing longer than four or five days." His mode of treatment consists in placing the patient in an easy recumbent position on a hair or straw mattress, with light covering. He gives cooling drinks and a mild laxative. After the bowels are moved, he gives the bromide at once in doses of 20, 30, or 40 grains, according to the urgency of the case, every three hours, until three doses have been taken; then he reduces the dose to one-half, to be continued as long as required, not neglecting such measures as are calculated to remove the cause.

Importance of Revaccination.—There is a case on record of a woman who was vaccinated we believe by Jenner himself, who then resisted variolous inoculation, who some years after nursed her own children through smallpox with impunity, and who nevertheless, at a very advanced period of life, caught the disease from a grandchild, and died.—Lancet, June 25, 1870.

Treatment of Gonorrhœa with Tannin and Glycerine.—Dr. Schuster states that tannin with glycerine at first forms a soft waxy substance, which soon becomes hard and brown, and melts in a moist atmosphere at the temperature of the body. Dr. Schuster has formed small pencils of this compound, which he inserts into the urethra of patients suffering from gonorrhœa. He has found the treatment by means of caustic injections (the abortive method) frequently to fail, and that it occasionally produces violent pain, inflammation, and hemorrhage. On the other hand, the treatment with slightly astringent solutions cures the gonorrhœa within a period varying from four to seven weeks, but is often followed by a troublesome gleet. The tannin-glycerine rods employed by Dr. Schuster are from three to four inches in length, well rounded at the extremities, and consist of thirty grains of tannin, one grain of powdered opium, and a sufficient quantity of glycerine to form a pastille. These rods are hard in winter, and soft in summer. Before their introduction, they should be dipped in warm water. They are to be left for from five to ten minutes in the urethra, and then withdrawn. If, however, they be left in for an hour or for a night, more or less pain is caused, and this appears to be due to a combination occurring between the tannin and the mucus or pus, which becomes hard, and acts like a foreign body. Dr. Schuster has had no case of orchitis following the use of these pencils, though he has thought it advisable to recommend the employment of a suspensory bandage, nor has he noticed any irritation of the bladder or prostate.

In cases of gleet a rod may be left in for a few minutes, and speedy cure usually results.—Lancet, Oct. 8th, 1870.

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Impotence consequent on Onanism cured by Electro-Magnetism.—Dr. FINSTEIN, of Ulm, reports a case of this in a man aged 26, who, from the age of 15 to 18, was addicted to onanism, which he relinquished after the latter period by the advice of a companion. At the age of 23 he found himself unable to have an erection. Various remedies were tried in vain, and at last electro-magnetism with the apparatus of Erdmann was resorted to, and after fifty-two applications, made twice daily, continued from 10 to 30 minutes, his powers were restored.—Révue de Thérapeutique, Sept. 1870.

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Pathological Lesions in Acute Dysentery which prevails at Sedan.—Dr. JOHN MURRAY presented to the Pathological Society of London, Oct. 18th, 1870. a number of specimens of intestines affected by acute dysentery, which he had brought from one of the hospitals near Sedan. The large intestines were greatly affected; the small intestines to a limited extent. The mucous membrane was swollen, tumid, deeply injected, and covered with minute aphthous patches. In the large intestine—especially in the colon and rectum—the mucous membrane was extensively and irregularly ulcerated, and patches, some not less than the area of an adult hand had completely sloughed away, leaving the muscular coat of the intestine bare. There was extravasation of blood into the submucous tissue. Peyer's patches were in some cases ulcerated, but superficially, and without deposit as in enteric fever, and the mesenteric glands and spleen were in these enlarged. The intestines contained blood, mucus, and extremely fetid fluid feculent matter and *débris* of the mucous membrane. Abscesses in the liver were very rare. The symptoms during life were those of tropical dysentery, but insidious and of a scorbutic character.—Dr. SCHULHOF asked if ipecacuanha was used in the treatment of these cases.—Dr. MURRAY replied that it had not been employed: there was none to be had. The cases had chiefly been treated by tincture of the perchloride of iron, given in small doses, frequently repeated. Bismuth was also a popular remedy amongst the German medical officers; opium was also employed.—Mr. HULKE referred to the great benefit which had resulted from the use of ipecacuanha in the Crimea.—Dr. WILKS reminded the Society that two centuries ago ipecacuanha had been introduced into France as a nostrum, under the name of the Radix antidysenterica.—Dr. CAYLEY. remarked that the specimens shown to the Society differed from tropical dysentery in so far as the cases presented ulceration of the small intestine, looking like enteric fever.—Mr. REEVES had seen ipecacuanha used at Saarbruck and elsewhere, and one case of dysentery in which symptoms pointing to abscess of the liver were present.—Brit. Med. Journ.,. Oct. 29, 1871.

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Heifer and Human Vaccination.—The Medical Department of the Privy Council directed Mr. Seaton to visit the various localities on the continent, where experience on the subject of animal vaccination was the most extensive. The results of this inquiry are contained in the last report, and it is there stated that the process of inoculation direct from the heifer presents many drawbacks. These, as recapitulated in the Privy Council report, are as follows:—

First, that apparently even able and painstaking operators may find it impossible to transmit successive vaccination from calf to calf without very frequent recurrence of failures and interruptions; secondly, that the transference of infection from the calf to the human subject even under the most favourable circumstances (*i. e.*, by experienced operators and with lancet direct from calf to arm) has in it such risks of failure, that, for instance, at Rotterdam, the proportion of unsuccess was nearly twenty times as great as in the ordinary arm-to-arm vaccinations; and, thirdly, that the calf lymph, as compared with ordinary lymph, is peculiarly apt to spoil with keeping, and in the form of tube-preserved lymph can so little be relied on, that the Rotterdam establishment in distributing supplies of lymph now uses only lymph from the human subject. Evidently, then, in the present state of knowledge, a system of animal vaccination would have in it an extreme uncertainty of operation; and this uncertainty would, for obvious reasons, be so conclusive, against our preferring the system on its own merits for purposes of public vaccination, that practically we have only to consider whether our own system has demerits entitling it to any considerable mistrust.

It has never been established that arm-to-arm vaccination is objectionable, and the alleged tranmission of syphilis and other diseases by it is, as yet, quite unproved. It is not even shown that the specific virus of one contagion is *capable* of containing the spore of another, and until the preliminary step of showing that there is really some danger to be avoided is achieved, it would be ridiculous to incur the certainty of unsuccess in many cases in the hope of thereby avoiding an imaginary shortcoming of the existing system of vaccination.—Med. Press and Circular, Nov. 2, 1870.

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Improved Test for Grape Sugar.—FEHLING's test fluid, it is well known, is not very permanent, spoiling even in diffused daylight. Lowe recommends the following modification of it, which is equally sensitive, and very stable: Sixteen grammes of pure sulphate of vitriol are dissolved in 64 grammes of water. To this solution 80 cubic centimetres of soda lye, having a specific gravity of 1.34, are added at a time, avoiding any elevation of temperature, until 112 grammes have been mixed; then from 6 to 8 grammes of pure officinal glycerine are poured in till the fluid assumes a beautiful azure blue colour.—Lancet, Sept. 24, 1870.

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Chloride of Aluminium.—Mr. SQUIRE states (Brit. Med. Journ., Oct. 22, 1870) that his experience with this new antiseptic (see p. 156) shows it to be of the highest utility.

"1. As a substitute for Burnett's disinfecting fluid; used somewhat more dilute than the form supplied, it was a most convenient means of disinfecting secretions in the utensils of the sick-room, and, moreover, without the danger and disadvantage of being a dangerous poison.

"2. Used of the full strength to deodorize water closets and defective drains, no great quantity was thus applied, for this use of it was considered wasteful. Not only is it better to remedy the cause of offence at once, by removing the defect, but the value of the solution of aluminium, medicinally was found to be very great.

"I have used the chloride of aluminium in the proportion of one part to twenty or thirty of water, as an astringent lotion; in a still stronger form, as a direct application to the throat, in some cases of diphtheria; largely diluted, ten grains to an ounce, as a gargle; still more dilute, three to five grains to an ounce, as an internal remedy; and, lastly, of the same strength as the gargle, in the form of a spray, in the third stage of hooping-cough. Details of a case in which this was used with remarkable benefit are given in a paper of mine read at the Obstetrical Society of London in May."

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Guarana a Substitute for Tea.—A late number of the "Pharmaceutical Journal" contains a paper on "Guarana," the seeds of a sapindaceous tree—the Paullinia sorbilis—which does not appear to have hitherto entered into European commerce. The guarana-yielding tree is found abundantly in the Amazonas. The fruit is scarcely as large as a walnut, and contains five or six seeds, which are roasted, then mixed with water, and moulded into a cylindrical form, resembling a large sausage, and finally dried in an oven. Before being used it is grated, and then resembles cacao. Two spoonfuls of the powder are mixed in a tumbler of water, and this drink, is regarded as a stimulant and nervine tonic. Like strong tea or coffee, it is said to take away the disposition to sleep. The active chemical principle is an alkaloid that Dr. Stenhouse has shown to be identical with theine. Guarana contains more than double as much of this alkaloid as good black tea, and five times as much as coffee, the proportion being 5.07 per cent. in guarana.—Lancet, Oct. 22, 1870.

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Citric Acid in After-Pains.—Dr. J. B. CHAGNON recommends (Canada Medical Journal, May, 1870) citric acid for after-pains following labour, and states it has never failed in his hands. He gives five grains of the acid in two or three ounces of water every five hours. It acts as a nervine, he says, and as a preventive of inflammation.

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Corns on the Feet.—The following method of removing these troublesome growths is given in "La Santé:" Macerate the tender leaves of ivy in strong vinegar for eight or ten days, then apply them on the corns. This dressing should be applied twice a day, and in a few days the corns will be removed.

Mortality of Foundlings.—Dr. C. R. DRYSDALE states (Brit. Med. Journ., Oct. 22, 1870): "In Paris, in 1865, of 4887 children abandoned younger than one year, 1516 died under the care of the Foundling Hospital. In fact, the mortality of Parisian children is excessive, since that city loses 39 per cent. of all its children under one year of age annually. There is an immensity of illegitimacy in Paris, which accounts for this great mortality. Society, naturally, cannot expect the mother of an illegitimate child to take much care of it, since it makes it almost impossible for an unmarried woman to get a living for herself, if burdened by an infant. Thus, in a private letter to myself from Dr. Leon Lefort, in June last, he informs me that more than one in four of the births in Paris are illegitimate. In some of the foundling hospitals in France as many as 90 per cent. of the infants confided to their care have died in less than a year. Our foundling hospital in Guilford Street is, of course, like many other London charities, a job; and even Mr. Acton was not able to find out whose children got into that favoured spot.

Female Medical Students.—Our readers will, we are sure, be pleased to learn that the Council of the University of Edinburgh, at their meeting, held October 28th, voted down a resolution for the instruction of male and female medical students in the same class, and also that the Managers of the Royal Infirmary of Edinburgh have unanimously determined not to admit female medical students to the practice of the Hospital.

At the meeting of the University Council, Prof. Turner opposed the motion which was intended to effect the instruction of males and females, in the same class. He stated that in Edinburgh the opinion of the intelligent public, of the profession and of the students, was so opposed to it that, if forced upon the medical faculty, it would seriously affect the reputation and interests of the University; and he emphatically declared that it was altogether repulsive to him to teach certain details of the medical education to mixed classes. Prof. Lister followed in an able speech, and announced his readiness to resign the office he so highly valued rather than bring himself to teach clinical surgery to a mixed class of male and female students. At the close of the debate Prof. Christison rose to refute the statement made by Prof. Masson at a previous meeting of the Council, that "the highest lady in the land" sanctioned the medical women movement; immediately after that meeting he received a message from the Queen to the effect that her Majesty concurred in the views then expressed by Dr. Laycock and Dr. Christison in opposition to the medical education of women, and her Majesty desired that her sentiments should be made known.

We congratulate the Medical School of the University of Edinburgh upon this vote of the Council, and the Staff of the Royal Infirmary upon the resolution of their Managers. We cannot forbear expressing our admiration of the noble and dignified stand taken by Prof. Lister in declaring his readiness to sacrifice, if necessary, his professorship with its accompanying honour and emoluments, to the preservation of public morals and the purity of his own conscience.

Although the women, for the last few months, have had permission to study medicine in the University, they are not satisfied with the regulation which compels them to seek instruction in classes apart from the males, but continue their demand that the sexes shall be taught together in the same classes. A year's trial of the practical working of the "woman movement" has failed to convince the University Council of the propriety of granting this *modest* demand of the "women doctors" and their friends.

If women are determined to study medicine despite all the obstacles which nature and society have interposed, let them seek their instruction from the teachers of their own sex, in their own schools and hospitals (all of which, in this country at least, exist), and not outrage common decency by intruding themselves into the hospitals, schools, and dissecting-rooms appropriated, by the sanction of prescription, to the use of the male sex.

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ON DISEASES OF THE SPINE AND OF THE NERVES.

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PHILADELPHIA:
HENRY C. LEA.
1871.

PHILADELPHIA:
COLLINS, PRINTER.

PUBLISHER'S NOTE.

This volume comprises a series of essays, extracted from the "System of Medicine," edited by J. Russell Reynolds, M. D., on a group of diseases of great interest, and many of them of frequent occurrence. These essays are from the pens of gentlemen of acknowledged ability and experience, who have paid particular attention to the several diseases on which they have written. The volume will be found to present the latest advances in the knowledge of the several subjects therein discussed.

Philadelphia, November, 1870.

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DISEASES
OF THE
SPINE AND OF THE NERVES.

I.

DISEASES OF THE SPINAL CORD.

By C. B. Radcliffe, M.D., F.R.C.P.

A. Preliminary Remarks.

Before proceeding to cope with the intricate and difficult pathological topics which form the subject of the present article, it appears to be expedient to glance at some points in the physiology of the spinal cord, and also to try and ascertain the true significance of pain, spasm, and certain symptoms analogous to pain and spasm, which figure conspicuously in the histories of spinal maladies; for if these matters be not disposed of as preliminaries now, they will prove to be the cause of frequent and distracting digressions afterwards.

1. *A glance at some points in the physiology of the spinal cord.*—The result of recent researches has been to establish in the fullest manner the truth of Sir Charles Bell's great discovery, that the posterior roots of the spinal nerves are devoted to sensation only, and the anterior roots to motion only. In one article, at least, the creed of to-day is the same as that of yesterday: and it is some comfort to have it so, for in many other articles faith is not a little shaken by the changes of belief which are now found to be necessary.

The view once held that the posterior columns of the spinal cord are made up of bundles of fibres passing from the posterior roots of the spinal nerves to the sensorium has proved to be untenable. Transverse division of these columns produces in the parts behind the section, *not* numbness, as it would do if these columns were simply the continuation of the posterior roots of the spinal nerves, but hyperæsthesia; and the pain resulting from the section is found to be due, not to any sensitiveness in the columns themselves, but to the irritation having extended to the posterior roots of the spinal nerves. Transverse division of these columns produces in the parts behind the section, not paralysis, but loss of co-ordinating power, such as is seen in locomotor ataxy. Moreover, the researches of Mr. Lockhart Clarke prove very clearly that the filaments, comparatively few in number, which go from the posterior roots of the spinal nerves to the posterior columns of the cord, do not end in those columns, but pass through them to the part to which the other and more numerous filaments composing the roots pass directly—that is, to the central gray matter of the cord; and thus it is not difficult to see why the posterior columns can be cut across without benumbing the parts behind the section—why a result should follow which would not be possible if those columns were the continuation of the posterior roots of the spinal cord.

All that has been said of the posterior columns of the cord appears to apply equally to the restiform bodies—to the bodies which form the chief connection between these columns and the cerebellum, and not to those bodies only, but also to the small posterior pyramids of the medulla oblongata, which pyramids lie between the restiform bodies posteriorly. The connection between the cerebellum and the posterior columns of the spinal cord, which is made by means of the restiform bodies, is indeed such as to make it not improbable that the posterior columns perform for the cerebellum a similar office to that which is performed for the cerebrum by the anterior columns, or, in other words, that the posterior columns do for the involuntary movements of co-ordination what appears to be done for voluntary movements by the anterior columns.

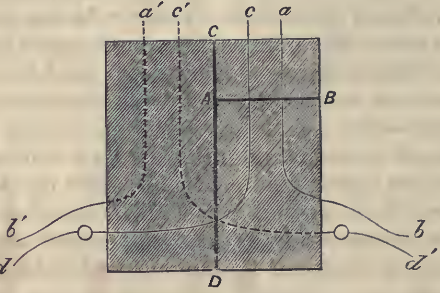
The anterior columns of the spinal cord have, without doubt, a special connection with the anterior roots of the spinal nerves, and an all-important part to play in voluntary movement; and yet this cannot be said of them, as was formerly supposed, in every part of their course. The power of voluntary movement on the same side of the body, in the muscles behind the section, is altogether destroyed when one of the anterior columns is cut across, unless the cut be in the part which lies immediately below the anterior pyramid of the medulla oblongata; and the same result happens when the adjoining lateral column is cut across where it lies side by side with that part of the anterior column which may be cut across without giving rise to paralysis. It is plain, in fact, that in the uppermost part of their course the anterior columns have not that intimate connection with the anterior roots of the spinal nerves, and that all-important part to play in voluntary movement, which they evidently have everywhere else. And it is also plain that the anterior columns have somewhat to do with sensation as well as with voluntary motion, for it is a fact that a certain degree of numbness is always produced by the injuries which give rise to paralysis.

A transverse section of one of the anterior pyramids of the medulla oblongata in any part of its course annihilates all power of voluntary movement in the muscles behind the section on the opposite side of the body; and thus it is plain, not only that each pyramid contains very many, if not all, the conductors concerned in carrying the orders of the will to the muscles of the opposite side of the body, but also that the conductors which are collected in one pyramid decussate with those collected in the other pyramid at the lower and not at the upper boundaries of the pyramids. If anæsthesia be the result of cutting across the anterior pyramids of the medulla oblongata, its amount is too small to be unequivocal; and, in a word, all the evidence, old and new, goes to show that these bodies are composed of conductors concerned in voluntary motion without any admixture of sensory conductors.

The office of the lateral columns of the spinal cord is not so clearly made out as that of the posterior and anterior columns. In the cervical region, for a short distance below the point at which the anterior pyramids of the medulla oblongata intercross, the lateral columns of the spinal cord have certainly very much to do in transmitting the orders of the will to the muscles; for, as has just been seen incidentally, the muscles behind the section on the same side of the body are paralyzed by cutting one of them across. In the lower part of the cervical region, and in the dorsal and lumbar regions, it is very different, and the difference is not very clearly determined. Here some trifling paralysis may be produced by dividing these columns transversely, but never more than this. Here, indeed, it would seem that this operation is followed by a certain degree of anæsthesia, and by the same result, as regards movement, as that which follows transverse division of the posterior columns—that is, not by paralysis, but by in-coördination. A certain degree of anæsthesia appears to be a constant consequence of cutting across the lateral columns in any part of their course; and herein would seem to be an important distinction between the lateral and the posterior columns, for, as has been stated already, the result of cutting across the posterior columns is to produce hyperæsthesia, not anæsthesia.

A section of the olivary bodies is followed, not by any marked degree of paralysis, or anæsthesia, but by a state of persistent spasm in many muscles on the *same* side of the body, in the neck especially—a state which may sometimes continue for days, weeks, or even months. It is found, also, that this strange result is produced by irritating several parts of the base of the encephalon, the lateral and posterior parts of the medulla oblongata and pons Varolii especially, as well as by irritating the olivary bodies. These parts are not very clearly defined. "They seem," says Dr. Brown-Séquard, "to be quite different from those employed in the transmission of sensitive impressions, or of the orders of the will to the muscles, at least in the medulla oblongata and pons Varolii. They constitute a very large portion of these two organs, and, perhaps, as much as three-fourths of the one first named. They are placed chiefly in the lateral and posterior columns of these organs; and because many of their fibres do not decussate, the spasm produced by irritating them is on the *same* side of the body."

Instead of being merely a nerve centre—the special centre of Marshall Hall's excito-motor system of nerves—there is now reason to believe (as Dr. Brown-Séquard has so clearly shown), that the gray substance of the spinal cord is an important conductor of sensory and motor impressions. Paralysis without loss of sensation on the same side of the body, loss of sensation without paralysis on the other side of the body, are the strange results of cutting across one lateral half of the gray substance of the spinal cord: anæsthesia on both sides of the body, paralysis on neither side, are the equally strange results of making a vertical section midway between the two lateral halves: these are the two great facts which, when properly interpreted, furnish the reasons for believing, not only that there are sensorial and volitional conductors in the gray substance of the cord, but also that these two forms of conductors follow a different and definite course. Nor is it difficult to see how this may be. Let the course of the conductors in connection with the anterior and posterior roots of a pair of spinal nerves be what is represented in the following diagram—*a b* being the motor conductor descending to the right, and *a′ b′* the corresponding conductor descending to the left; *c d* being the sensory conductor ascending from the left, and *c′ d′* the corresponding conductor ascending from the right—and very little reflection will serve to supply the demonstration wanting. With the sensory and motor conductors



arranged in this manner, it is plain that a cut across the right lateral half of the gray substance—a lesion indicated in the diagram by the line A B—must destroy the continuity of the motor conductor *a b*, and of the sensory conductor *c d*, and leave untouched the motor conductor *a′ b′*, and the sensory conductor *c′ d′*—must bring about, that is to say, what has been seen to happen in the first of the two experiments under consideration; namely, preservation of sensation with loss of motion on the side of the lesion, and preservation of motion with loss of sensation on the opposite side. Again, with the sensory and motor conductors arranged in this manner, it is plain that a longitudinal section of the gray substance of the cord midway between the two lateral halves—a lesion indicated in the diagram by the line C A D—must leave the motor conductors *a b* and *a′ b′* untouched, and cut across the sensory conductors *c d* and *c′ d′* at their point of decussation—must bring about what happens in the second of these two experiments, viz., numbness on both sides of the body, and paralysis on neither side.

In saying that paralysis without loss of sensation, on the same side of the body, and loss of sensation without paralysis, on the other side of the body, is produced by cutting across a lateral half of the spinal cord, all is not said that has to be said. In such a case there is, in addition, increased temperature and sensibility on the side on which sensation is preserved, and diminished temperature on the side on which sensation is lost, especially if the section be made high up near the medulla oblongata. It would seem, in fact, that the injury has acted on the vaso-motor nerves contained in the cord as well as upon the common motor and sensory nerves, causing paralysis of vaso-motor nerves on the side on which there is increased temperature and sensibility, and irritation of vaso-motor nerves on the side on which there is diminished temperature and anæsthesia. At any rate this mode of explanation is neither impossible nor improbable. The experiments of Professor Claude Bernard, Dr. Brown-Séquard, and others upon the cervical sympathetic, prove that when this nerve is paralyzed by dividing it, a state of hyperæmia, of which the most conspicuous signs are a bloodshot state of the conjunctiva and of the lining membrane of the nostril and ear, with a contracted pupil, and with increased temperature, is at once set up on the same side of the head: and also that when the end of the divided nerve which is separated from the cord is irritated, the immediate result is dilatation of the pupil, with an almost complete blanching and cooling of the parts which were bloodshot and warm a moment before. The vessels in these parts evidently relax and receive more blood when their nerves are paralyzed, and contract and receive less blood where their nerves are irritated; and the increased temperature and sensibility which happens in the one case, and the diminished temperature and sensibility which happens in the other case, are nothing more than the natural consequences of the increased or diminished quantity of blood in the parts in each case respectively. All this is plain enough. Moreover, there are other facts which go to show that phenomena in every way analogous to those which result from paralysis or irritation of the cervical sympathetic are produced by paralyzing or irritating the vaso-motor nerves in other parts. There is, therefore, no reason why it may not be inferred that the increased temperature and sensibility of one side of the body, and the diminished temperature of the other side, which happen when a lateral half of the spinal cord is cut across, are the result of vaso-motor nerves being paralyzed in the one case and irritated in the other case. Nay, such an assumption is well-nigh inevitable, for the structural connection between the spinal and sympathetic systems of nerves is such as to make it scarcely possible to believe that a lateral half of the cord can be cut across without paralyzing and irritating vaso-motor nerves.

Above and below the decussation of the anterior pyramids of the medulla oblongata the conductors which have to do with sensation and voluntary motion are arranged differently in the spinal cord. Above this point, the sensorial and volitional conductors belonging to one side of the body lie together in the same lateral half of the cord, and this half is that which appears to belong, not to the same side of the body, but to the opposite side; at this point, the volitional conductors separate from the sensorial and pursue a different course to what is the common destination of both conductors alike, the volitional conductors crossing over at once and in a body to the other side of the cord and passing down this side until each one reaches the particular anterior root at which it emerges, the sensorial conductors passing down the same side of the cord and not crossing over to the other side (where they rejoin the volitional conductors) until they arrive at the level of the particular posterior roots with which they are connected. In other words, the sensorial and volitional conductors of the two sides of the body decussate, both of them, in the spinal cord, but not in the same place, the decussation of the volitional conductors being confined to the narrow path where the anterior pyramids of the medulla oblongata intercross, the decussation of the sensorial conductors being all along the spinal cord from one end to the other. Higher up or lower down than the narrow path which has been indicated, there appears to be no intercrossing whatever of volitional conductors.

All the forms of sensorial conductors—those which take cognizance of touch, pain, tickling, temperature, and the rest—appear to follow the same course in the cord, those of the two sides decussating along the whole length of the cord at the level of their entrance or thereabouts, and ascending to the sensorium in the opposite half of the cord to that into which they first pass from the posterior roots; but all the forms of motor conductors do not follow the course of the volitional conductors. Below the point where the anterior pyramids of the medulla oblongata decussate, all forms of motor conductors alike seem to agree in not decussating: at this point, the only motor conductors which decussate would seem to be the volitional. Thus, the increased temperature and sensibility resulting from paralysis of vaso-motor nerves, which is produced by cutting into one side of the medulla oblongata, above the decussation of the anterior pyramids, and the persistent spasm which follows irritation of the corpus olivare and the neighbouring parts—which spasm points to the presence there of motor conductors whose function is not yet clearly determined—are on the *same* side of the body, and not on the opposite side, as they would be if these two kinds of motor conductors decussated like the volitional conductors.

When the continuity of the cord as a conductor is entirely interrupted by being cut, torn, compressed, or injured in any other way, voluntary movement and sensation are immediately abolished in the parts behind the injury, and at the same time the paralyzed muscles, especially in the lower extremities, become much more susceptible to reflex action. The increased susceptibility to reflex action is developed immediately, or all but immediately, and it may continue with little change for days, weeks, or even months—a fact which does not appear to be very intelligible on the current view of muscular action, but a fact nevertheless. The higher the seat of injury to the cord, the higher must be the level to which the paralysis reaches, and (if the respiratory muscles be affected at all) the greater the interference with the breathing, and, as may be easily understood, it is not difficult to form a tolerably correct diagnosis of the locality of the injury by taking these variations into consideration. If the injury be at the upper limit of the sacral region of the cord, the muscles of the bladder and anus will be paralyzed, and so will the muscles of the lower extremities, with the exception of those which are supplied by the anterior crural and obturator nerves (the psoas, iliacus, sartorius, pectineus, adductor longus, a. magnus, a. brevis, obturator externus, vastus externus, v. internus, rectus femoris, &c.), which nerves come off from the second, third, and fourth lumbar pairs of spinal nerves. If the injury be very low down in the sacral canal, the compressor urethræ and the accelerator urinæ, as well as the sphincter ani, will be paralyzed, but not the muscles of the legs; for the nerves of the three muscles, specified by name, come off almost from the extreme end of the cord, and below those which go to form the great sciatic. When the injury to the cord is higher up in the cord, in addition to the loss of voluntary power in the lower extremities and in the bladder and anus, the respiratory muscles will be more or less paralyzed. If the injury be at the upper limit of the lumbar region, the lateral muscular walls of the abdomen will be paralyzed, and so will all the muscles of the lower extremities, and one effect of the paralysis of the abdominal walls will be to compromise greatly the expiratory movements of respiration. If the injury be high enough to paralyze intercostal muscles, inspiration will be interfered with as well as expiration, and the degree of interference will be in proportion to the number of intercostal muscles implicated. If the injury be low down in the cervical region, all the intercostals will be paralyzed, and so will the muscles of the upper extremities, except those of the shoulders, which receive their nerves from higher portions of the cervical region. If the injury be at or above the middle of the cervical region—at or above the level of the fourth cervical pair of spinal nerves—death will at once result from the suspension of all inspiratory movements. In this latter case it is customary to ascribe the stoppage of breathing to paralysis of the nerve which supplies the diaphragm—that is, the phrenic; but this explanation does not go far enough. The injury which paralyzes the diaphragm paralyzes the scaleni, the intercostales, and the serrati magni, which muscles elevate the ribs in ordinary respiration, and in so doing play a part which is scarcely less important than that played by the diaphragm; and not only so, but it paralyzes also the greater number of those accessory respiratory muscles which, acting upon and from the shoulders, come to the rescue when a great effort at inspiration is necessary, and produce additional expansion in the upper part of the chest. Not only is there a great difference between calm respiration and forced respiration, but there is a great difference also between the respiration of males and that of females. "In males," says Dr. Hutchinson, "the abdomen first bulges outwards, and the ribs and sternum nearest to the abdomen quickly follow this movement, until the motion, like a wave, is lost over the thoracic region. In females the breathing commences with a gentle heaving of the upper part of the thorax, more or less apparent according to the fulness of the mammæ, and with some slight elevation of the shoulders; and this movement of expansion spreads from rib to rib in a downward direction, and any bulging of the abdomen from the descent of the diaphragm is distinctly after this heaving of the lateral walls of the chest, not before it." In females also this bulging of the abdomen is so inconsiderable that the number of respirations cannot be counted by the hand resting on that region as it can be in the male. In calm breathing, in fact, the diaphragm does more and the ribs do less in males than in females, and this difference is so real that, for the sake of distinction, calm breathing may be spoken of as diaphragmatic in males, and as costal in females. This difference, indeed, is such that respiratory movements which are healthy in women are morbid in men; and *vice versâ*, that movements which are healthy in men are morbid in women. "In forced breathing," Dr. Hutchinson again says, "the greatest enlargement of the thoracic cavity in both sexes is made by the ribs and not by the diaphragm, as is generally believed;" and that this statement expresses what really happens, appears to be evident in the fact that in such breathing the hollow at the pit of the stomach, instead of being filled out and protruded, as it must be if the diaphragm descended in any marked degree, is actually drawn in and depressed. In forced breathing, indeed, the costal inspiration of women becomes more costal, and the diaphragmatic inspiration of men changes from this form to the costal. It is certain, however, that there may be forced diaphragmatic breathing as well as forced costal breathing, and that the one may be made to take the place of the other by an easy effort of the will, or by changes of position which interfere with the action of the diaphragm on the one hand, or of the ribs on the other. There is, indeed, no difficulty in understanding why diseases which interfere with the action of the diaphragm or ribs should make the breathing costal or diaphragmatic, as the case may be. As regards the expiratory movements of respiration there is little to say. In tranquil breathing, in males and in females alike, expiration is performed by the relaxation of the diaphragm allowing the abdominal viscera to press up into the position from which they had been depressed in inspiration by the contraction of this muscle, by the relaxation of the costal muscles allowing the ribs to spring back into the position from which they had been pulled up in inspiration by the contraction of these muscles, and by the resiliency of the air-passages themselves. In forced expiration the lateral and inferior muscular walls of the abdomen will help to empty the chest by pulling down the ribs and by contracting upon the abdominal viscera, so as to cause them to push up the diaphragm more effectually. It is easy, indeed, to see how a lesion of the spinal cord which paralyzes the lateral and inferior abdominal walls must interfere with the movements of expiration, and especially with such violent movements as coughing or sneezing. In a word, the whole case of the respiratory movements is one which makes it impossible to continue in the belief that the one reason why the division of the cord at or above the origin of the phrenic nerve proves fatal, is because the diaphragm is paralyzed; for the plain fact is, that the injury which paralyzes the diaphragm paralyzes the muscles which elevate the ribs, both ordinary and extraordinary, and so puts an end to movements which are quite as important as those of the diaphragm, if not more so, in carrying on respiration. Of the other phenomena which may be present when the injury which interrupts the continuity of the cord as a conductor is in the neck, but not so high as to destroy life immediately, and which are not likely to be present when the injury is much below the cervical region, difficulty of swallowing, difficulty in vocalization, contraction of pupils, palpitation, and priapism appear to be the most important.

In these remarks the name of Dr. Brown-Séquard has been mentioned more than once, and it might have been mentioned oftener very easily. Indeed, it is not too much to say that the discoveries of this very distinguished physiologist mark a new epoch in the physiology and pathology of the spinal cord.

2. *On the practical significance of pain and spasm, and of certain other symptoms more or less akin to pain and spasm.*—Have these symptoms to do with inflammation, or with a state which, though not unfrequently passing into inflammation, is in reality diametrically opposed to inflammation? This is the question to which I propose now to seek the answer, first, in relation to pain and the symptoms akin to pain, and, secondly, in relation to spasm and the symptoms akin to spasm.

(*a*) *On the practical significance of pain and the symptoms akin to pain.*—There are some points in the history of common neuralgia—the beginning and ending of the paroxysm periodically at a given time, the association of the pain with rigors, the frequent ending of the pain in an obscure fit of feverishness, and others—which are calculated to suggest some relationship between this disorder and ague. It would seem, indeed, especially in that form of neuralgia which is met with in agueish districts, as if the neuralgia and the rigors were companion symptoms—as if there was some connection between the pain and a depressed state of the circulation, such as is met with in the cold stage of ague. There is also some reason to believe that neuralgia is antagonized rather than favoured by inflammation and fever. It is no uncommon thing for the history of facial neuralgia or tic douloureux to be this: first, neuralgia, without local tenderness and swelling, and redness, and with frequent chills and shivers, and a decidedly depressed state of the circulation; afterwards, cessation of neuralgia, cessation of chills and shivers, with local tenderness, redness, and swelling, and with some slight feverish reaction. What I have experienced in my own person, as well as what I have witnessed in others, enables me to speak with all confidence upon this point. It is also the rule, rather than the exception, for the *neuralgic* pain of toothache to come to an end when the face becomes swollen and inflamed; and it does not seem to be otherwise with the stabbing neuralgic pains which so generally precede the inflammatory eruption of herpes, for it is usual for these pains to subside concurrently with the development of the eruption. Nay, I know of several cases of sciatica, in which the relief to the neuralgic pain was coincident with the development of a tenderness which seemed to betoken neuritis at one or more points in the course of the painful nerve, and in which, after this change, the patient was comparatively free from pain so long as the lame limb was kept still and let alone. With respect to neuralgia, in all its manifold forms, indeed one thing is certain, and this is, not only that neuritis is not necessary to its production, but also that this form of inflammation is at most a very exceptional complication.

Nor is a different conclusion to be drawn from the history of rheumatic and gouty pain.

In acute rheumatism it is generally found that the pains which had been torturing the patient for days, or weeks, or months previously, preventing him from being at ease in the daytime, and causing him to toss about in sleepless misery at night, come to an end when the feverish reaction and local inflammation of the fully-formed disorder make their appearance. After this, the joints are *tender* enough; but if the patient keep as still as he is very likely to do under the circumstances, he is comparatively or actually at ease so far as his old rheumatic pains are concerned. Or, if it be otherwise, the pains will generally be found to be in a part in which the signs of rheumatic inflammations are imperfectly established or absent, or else at a time when there is a decided remission in the feverish reaction—an event which happens more frequently in this disorder than is commonly supposed.

And certainly it is simply impossible to look upon the local inflammation of gout as essential to the racking pain of this disorder. "About two o'clock in the morning," says Sydenham, who knew full well from personal experience what he ought to say, "the patient is awakened by a severe pain in the great toe, or more rarely, in the heel, ankle, or instep. The pain is like that of dislocation, and yet the parts feel as if cold water were being poured over them. Then follow chills and shiverings, and a little fever. The pain, which was at first moderate, becomes more intense; and with its intensity the chills and shivers increase." After tossing about in agony for four or five hours, often till near daybreak, the patient suddenly finds relief, and falls asleep. Before falling asleep, the only visible change in the tortured part is some swelling in the veins; on waking in the morning the part has become swollen, shining, red, tender beyond measure, and more or less painful, but painful only to a degree which is as nothing in comparison with the torture of the night past. It seems, indeed, as if the pain which now exists may in great measure be referred to the mere tension and stretching of the inflamed ligaments, for it may be relieved, or even removed, by judiciously applying support to the toe and sole of the foot. On the night following, and not unfrequently for the next three or four nights, the sharp pain may return, reappearing and disappearing suddenly, or almost suddenly, and resulting in the development of additional inflammatory swelling in the interval between falling asleep and waking in the morning. The pain in these relapses, like the pain in the first attack, is accompanied by chills and shivers, and by the most distressing irritability and excitability; but, until unequivocal signs of inflammation are developed in it, the painful part is not tender in the true sense of the word. The inflammation, moreover, is attended by no fever, or by very little; or if it be otherwise, as it is occasionally, the inflammation runs higher than usual, *and the characteristic pain is less urgent than usual.* Dr. Garrod points out this latter fact in his excellent work on gout. From its history, then, it would seem as if the pain went hand in hand with the rigors which belong to the cold stage of gouty inflammation. It would seem as if the inflammation, as inflammation, had little to do with the pain; for if it were otherwise it is scarcely to be supposed that the pain should be least urgent in the cases of gout in which the inflammation is most marked, and that the unequivocal signs of inflammation should make their appearance during sleep without waking the patient. Nay, it would even seem as if the pain were put an end to by the establishment of inflammation—as if, in fact, the pains were antagonized rather than favoured by the inflammatory condition. Moreover, the suddenness with which it begins and ends in the majority of cases must be looked upon as a reason for referring the pain to the category of neuralgia—a disorder with which, as I have already shown, inflammation has no necessary connection.

There is also reason to believe that pain holds the same relation to fever and inflammation in other kinds of fever besides the rheumatic, and in other kinds of inflammation besides the gouty.

The pain in the back, often very severe, which ushers in smallpox, disappears before the hot stage is fully established. It comes and goes hand in hand with the rigors, and it belongs to the cold stage as evidently as do the rigors. And this would seem to be the case also in other fevers; for it is the rule, and not the exception, for the pains which attend upon the onset of these disorders to pass away or to become greatly mitigated as soon as the cold stage gives place to the hot. Nay, it would seem as if pain gave place for the time to what may be called artificial feverishness. At any rate, I have more than once felt tic douloureux in my face pass away as soon as I could set my blood in brisk motion by violent bodily exercise; and on two occasions I have put a stop to a sudden attack of lumbago while in the saddle, by a practice which is not unfrequently adopted in such a case in the hunting-field—that is, by leaning forwards, and beating the loins with the hands until the whole body was aglow, and the perspiration dropped from the forehead.

The acute pain of a dislocation or sprain—the pain to which Sydenham likens that of gout—does not, as a rule, remain after the parts have begun to be hot and tender and swollen; and as a rule, also, the pain of idiopathic inflammation goes before, and not along with, the redness and heat and swelling. In the idiopathic, as well as in the traumatic forms of inflammation, it would seem, indeed, as if the pain were related to the cold stage of the disorder, and not to the hot. Nor is a contrary conclusion to be drawn from the history of those cases in which the pain continues after the hot stage of the inflammation is fully established, for in these cases this persistent pain is evidently (in great measure at least) due to the stretching of parts made tender by the inflammation. Thus, for example, the pain which remains after the hot stage is fully established in orchitis and pleuritis, is at once removed or relieved by means which obviate this stretching—in the former case by the free use of the knife, in the latter case by the application of a roller around the chest, so as to prevent the movement of the ribs over the seat of inflammation.

Even in inflammation of the membranes of the brain, severe pain in the head cannot be looked upon as a symptom of this inflammation.

Three or four years ago I had a youth in the Westminster Hospital with well-marked symptoms of acute cerebral meningitis. When I first saw him, he complained of frequent rigors and of a constant agonizing pain in the head, and at this time his face was pale and perspiring, his ears and his head generally were below the natural temperature, his pupils somewhat dilated, and his pulse contracted and feeble. Eight hours afterwards, when I saw him the second time, his face was flushed, his head burning hot, his pupils contracted, his eyes ferrety, his skin hot and dry, his pulse strong and full, and fierce delirium had taken the place of the pain. And this, so far as my experience goes, is the regular history of pain in this disorder. It is pain ceasing, not pain beginning, as the symptoms of active determination of blood to the brain make their appearance. It is pain in association with an anæmic rather than with a hyperæmic condition.

For these among many reasons it is that pain (with the exception of that form of pain which is dependent on tenderness, and which is accidental only) does not appear to be a symptom of inflammation or fever. In inflammation or fever the pain would seem to be connected with the cold stage preceding the hot stage, and not with the hot stage itself—with a state of capillary contraction and deficiency of blood, and not with a state of capillary relaxation and excess of blood—with a state of vaso-motor irritation, and not with a state of vaso-motor paralysis: in other cases, the pain would seem to have to do with a state of circulation which is in reality closely akin to that which exists in the cold stage of inflammation and fever. Pain, however, must not be regarded as a symptom of inflammation or fever because it happens to be associated with the so-called cold stage of these disorders. In point of fact, this so-called cold stage of inflammation or fever is a state which is diametrically opposed to the so-called hot stage. In this cold stage, the vaso-motor nerves (and not these nerves only) are in a state of irritation, and, as the result of this irritation, the capillaries are contracted and bloodless; in the hot stage, on the contrary, the vaso-motor nerves are paralyzed, and, as a result of this paralysis, the capillaries are relaxed and bloodshot. Instead of being stages in the same process, the so-called cold stage and the so-called hot stage are conditions diametrically opposed to each other. Instead of being stages in the same process, it would rather seem that the hot stage has a remedial relation to the cold stage—that, within certain limits, the hot stage is the salutary refluence of a tide of life which has ebbed too low in the cold stage. It is not difficult to see that there is an intimate connection between the so-called cold stage and the so-called hot stage, and that the first may easily change into the second. It is not difficult to see that there must be this relation between these stages; for if, as there is good reason to believe, irritation of vaso-motor nerves may bring about the cold stage by causing contraction of vessels, it is easy to understand that the paralysis of vaso-motor nerves, which follows when this irritation is carried beyond a certain point, may lead to the hot stage by causing relaxation of vessels. At any rate, be this as it may, the plain fact would seem to be that pain, with the exception of that form of pain which is dependent on tenderness, is a symptom belonging to the so-called cold stage of inflammation and fever, or to a state of circulation closely akin to it, and not to the hot stage of inflammation and fever, or to a state of circulation akin to it. Nay, it may even be supposed, and not without some show of reason, that pain *must* be associated with contracted and empty capillaries; for, the sympathies of the nervous system being what they are, it is not easy to believe that the vaso-motor nerves do not participate in the irritation which acts on the sensory nerves, and which, so acting, gives rise to pain.

And if this be so—and this is the practical conclusion to which these remarks tend—it follows that pain is likely to be relieved by measures which are calculated to rouse the circulation and increase the quantity of blood in the capillaries of the principal part, and not by those which have a contrary action.

With regard to tingling and other symptoms which are more or less akin to pain there is little to say. Indeed, all I can say is that the history of these symptoms, so far as it is known to me, would seem to agree rather than to disagree with that of pain, in connecting them with a state of irritation, and not with a state of actual inflammation.

(*b*) *Of the significance of spasm and the symptoms akin to spasm.*—The violent and general epileptic form of convulsion which attends upon death by hemorrhage or suffocation is associated with a defective and not with an excessive supply of arterial blood to one or other of the great nerve-centres. Nor is it otherwise with ordinary epileptic or epileptiform convulsion. The deathly paleness of the countenance which precedes the convulsion is, indeed, a plain proof that the fit commences in a state of circulation which is the very opposite to that of active determination of blood to the head, and the strong pulse which is usually perceptible in the arteries as the fit progresses is no contradiction to this conclusion. This strong pulse is usually regarded as a sign of arterial excitement—as a proof that more arterial blood is being injected into the arteries at this time, and that, on this account, certain nervous centres are excited to an unwonted degree of activity; but the simple fact is, that the strong pulse which is present under these circumstances derives its strength, not from arterial blood, but from venous. Black blood is being pumped into the arteries at the time, and because black blood moves less readily through the capillaries than red blood, the arteries become distended and the pulse endowed with a counterfeit power. The strong pulse in question is caused by the suffocation which is a part of the fit; it is a pulse of black blood and not of red, as may easily be proved by making an opening into the artery; it is nothing more, in fact, than the natural pulse of suffocation. Hence, the strong pulse of the epileptic or epileptiform paroxysm is no proof that this form of convulsion is connected with an excited condition of the circulation; on the contrary, when rightly read, it points only to the opposite conclusion.

It would seem also that convulsion is not associated with an over-active condition of the circulation, even in those cases in which at first sight it might appear to be so. In the fevers of infancy and early childhood, especially in the exanthematous forms of these disorders, convulsion not unfrequently takes the place occupied by rigor in the fevers of youth and riper years. It occurs in the initial cold stage, or else in the last moments of life, not in the intermediate hot stage. Again in inflammation of the membranes of the brain, convulsion, when it occurs, is connected with the cold stage before the hot stage, or with the cold stage after the hot stage, and never with the hot stage itself. Nay, I am disposed to think that there is something altogether uncongenial between convulsion and a state of febrile reaction in the circulation, for it is a fact not unfrequently verified that fits of common epilepsy are often suspended during the continuance of such reaction.

As indeed I have endeavoured to show at length elsewhere, especially in the lectures which I delivered at the Royal College of Physicians, in London in 1862 (post 8vo. London: Churchill and Sons), the physiology and pathology of muscular action, so far as I can read them, serve only to connect all the varied forms of tremor, convulsion, and spasm, with diminished and not with increased activity of the circulation; and thus the practical significance of spasm and the symptoms akin to spasm would appear to be the same as that of pain and the symptoms akin to pain—namely this, that the measures calculated to afford relief are likely to be those which will rouse the circulation to greater activity and increase the quantity of blood in the capillaries, and not those which have a contrary action.

B. On Diseases of the Spinal Cord.

Under the head of diseases of the spinal cord there is no lack of subjects. As of primary importance may be mentioned spinal meningitis, myelitis, spinal congestion, tetanus, and spinal irritation; as of secondary importance, locomotor ataxy, reflex paraplegia, infantile paralysis, hysterical paralysis, hemorrhage, white softening, induration, atrophy, hypertrophy, tumour, concussion, compression, vertebral caries, spina bifida, &c. I shall take each of these subjects in the order in which it has been enumerated, and, as far as I can, apportion the limited space at my command (very limited for such a purpose) so that there may be room for saying most where most is wanted.

I. Meningitis.

Inflammation of the membranes of the spinal cord is usually associated with inflammation of the substance of the cord (myelitis) or with inflammation of the membranes of the brain, but uncomplicated cases do occur now and then, and with care it is not difficult to discriminate between the symptoms which are essential to spinal meningitis and those which are only accidental.

1. Symptoms.—In order to arrive at a knowledge of the symptoms of spinal meningitis, I will relate as a text one of three cases verified by post-mortem examination which have come under my own notice,

and then proceed to see wherein it agrees with or differs from other cases of the kind. I choose an acute case rather than a chronic one, for it is only in the acute form of the disease that the symptoms are to be defined with certainty.

Case.—A lightly-made, delicate-looking youth, nineteen years of age, a cigar-maker by trade, was admitted into one of my wards in the Westminster Hospital on the 27th December, 1864.

(*a*) When I saw him first—this was on the day after his admission—he complained chiefly of pain in the back and great general weakness and weariness, and expressed his belief that he had got rheumatic fever. He was then sitting by the fireside, and looking very ill. On telling him that he had better lie down, he got up and walked towards his bed, or rather he attempted to do so, for the first step brought on a severe pain in the back and legs, with a feeling of faintness and want of breath, and he would have fallen if assistance had not been at hand. Very soon after lying down he passed about a quart of water without any difficulty.

(*b*) The account he gives of himself is this. A week ago, after being very tired by a long walk, he was seized by shiverings and sharp pain between the shoulders. During the next three days he was feverish and without appetite, but still able to go about and do his work. All this while, he had very little pain, and his nights were not disturbed. On the night of the fourth day from the commencement of the illness he was awakened by violent pain along the whole course of the spine in the groins, and in the right leg. Next day the pain occurred several times in paroxysms, and was accompanied by a good deal of starting and jerking in the legs; and so also on the two days following. On the day before admission to the hospital some difficulty in opening the jaw was experienced, and the paroxysms of pain, and jerking, and starting, had become more frequent and urgent. All this while the bowels and bladder acted properly.

Dec. 28. There is no material change since yesterday—not for the worse, certainly.

29*th.* Last night, after three or four hours' sleep, the patient awoke with very severe pain along the spine and down both legs; and since that time the pain has recurred several times. These attacks are separated by intervals of comparative or complete ease, and instead of the jerks and starts, which went hand in hand with it previously, the pain is now accompanied with stiffness in the muscles of the back and legs. At the present moment (about 2 P. M.) the head is drawn back on the pillow, and considerable pain and stiffness in the neck is caused by moving it. Before making this movement the patient was free from pain and stiffness in this region. Asking him to try to sit up, he attempted to do so, but was stopped at once by a severe paroxysm of pain along the whole length of the spine and down the legs, and by the muscles in the painful parts becoming stiff. The action of the muscles produced in this way arched the body backwards almost as much as in ordinary cases of tetanus, and at the same time pursed up the mouth and eyes, and gave a set expression to the features generally, so that the patient for the time had the appearance of a person considerably older than himself. The pain went off in a few minutes, and soon afterwards the stiffened muscles relaxed. The effort to move one of the legs spontaneously gave rise to sharp pain in the thigh and loins, and the limb became somewhat stiffened in a semi-flexed position, and this state of things did not pass off for several minutes; and passive movement produced the same result. There was no numbness: on the contrary, the condition of the skin as to sensation everywhere, as judged by pricking and pinching and by differences of temperature, was plainly that of slight over-sensitiveness. Pressure along the spinal column failed to detect tenderness anywhere, and the result of applying a sponge wrung out of hot water was equally negative.

In the course of the examination it was evident that any movement of the body, or neck, or legs, active or passive, gave rise to pain and stiffness in the muscles moved; and also that there was little or no pain or stiffness so long as the patient kept quite still. It was evident, in fact, that the muscles were relaxed, except perhaps in the neck, in the intervals between the paroxysms. The poor sufferer was evidently in a great strait, dreading all movement, because he knew full well what the effect of movement would be, and at the same time continually prompted by an intolerable feeling of unrest and fidgetiness to wish to have his position changed in a way which he could not or dared not compass by his own efforts: and it is difficult to avoid the conclusion that the stiffness is, in the main, an instinctive act to prevent the movement which gives rise to the pain, rather than spasm like that which is met with in tetanus. The arms are affected as well as the legs, but not to the same degree. They are weak—so weak that it is not easy to find strength to carry the food to the mouth, the left arm being somewhat the weaker of the two. The left arm also cannot be moved, either actively or passively, without giving rise to pain and rigidity, to pain shooting up between the shoulders, to rigidity flexing the limb somewhat at the elbow, and bending the thumb slightly into the palm: not so the right arm. There is no numbness in either arm, and no very decided over-sensitiveness. Mastication is difficult, and deglutition still more so, apparently from the muscles set in movement becoming stiff in moving. The breathing is shallow and slow; the pulse quick (130) and very wanting in strength; the skin profusely perspiring after a paroxysm, and hot and moist at other times. Thirst is much complained of. The bladder is full, and it cannot now be emptied voluntarily. The urine is acid. The penis is flaccid, and has been so ever since the commencement of the illness. The bowels have not acted. The pupils are equal and natural, and there is no headache or other "head symptom."

30*th.*—A tolerably good night has been passed, and this afternoon the patient thinks himself a little better.

31*st.*—There has been a bad night, and much ground has evidently been lost since the last visit. In a paroxysm which is just over, want of breath was experienced rather than pain. Sensation is still somewhat exaggerated everywhere. Urine cannot be passed without the catheter, but the bowels have responded to-day to a dose of castor oil and spirits of turpentine which was administered yesterday. During my visit I had an opportunity of seeing the patient *after* a paroxysm as well as in it, and I quite satisfied myself that the muscular stiffness of the paroxysm soon passed off, and that in the interval between the paroxysms the muscles were relaxed, except perhaps at the back of the neck—with this possible exception, because all along the head remained drawn back to some degree upon the pillow.

Jan. 1, 1865.—The night has been perfectly sleepless, with now and then some trifling lightheadedness. The paroxysms of pain, stiffness, and difficulty of breathing are not so frequent (three hours have passed since the last), but the respiration is certainly shallower and less sufficient, and the pulse more rapid and unsteady. There is the same want of power over the bladder. When I left the ward it was plain enough that the patient was sinking; when I returned two hours later all was over, death having happened in a fit of choking and suffocation caused by attempting to swallow a spoonful of beef-tea with a morsel of bread sopped in it. *In the agony, the patient not only sat up in bed, but got out of bed and stood for a moment with his hands bearing upon the shoulders of the nurse who had been feeding him.* The body was examined after death by my friend and colleague, Dr. Bazire, and the following notes were taken at the time from his dictation:—

"Time, twenty-four hours after death. Weather frosty. Cadaveric rigidity well marked. The muscles of the back dark and highly congested. On cutting through the posterior arches of the vertebræ the vertebral vessels are seen to be gorged with dark fluid blood. There is no effusion of blood outside the meninges in the interior of the canal. The meninges are highly congested throughout the whole length of the canal, but to a considerably greater degree in the region between the scapulæ. In this latter region, in addition to the thickening, opacity, and intense red colour of the dura mater elsewhere, there are streaks in its substance of black coagulated blood. The arachnoid is intensely red, and the pia mater extremely congested in the same region. Beyond it, the dark red colour of the dura mater gradually passes into a lighter shade, and becomes a bright pink near the cauda equina in one direction, and near the medulla oblongata in the other. The arachnoid is whitish again near the cauda equina. There is no effusion of serosity, blood, or pus, either between the meninges or on the surface of the cord; indeed, there seems to be a smaller quantity than usual of cerebro-spinal fluid. The substance of the cord itself looks normal in consistence, colour, and size. The central vessel of the cord is highly congested, and on section of the cord there exudes from the centre fluid black blood in minute drops. The cerebral meninges are normal. The cerebral sinuses are highly congested, and the same appearances of congestion (due probably to the mode of death) are met with in the substance of the brain. The organ itself is normal."

The symptoms of acute spinal meningitis are plainly exhibited in this case, and there need be no difficulty in distinguishing those which are of primary importance from those which are secondary.

As symptoms of primary importance may be enumerated these:

fits of pain along the spine and in the extremities produced by movement; fits of muscular stiffness in the painful parts along with the pain; intervals of comparative or complete freedom from pain and muscular stiffness so long as movement can be avoided; absence of paralysis; some exaltation of sensibility; loss of power over the bladder; partial loss of power over the bowel; absence of spinal tenderness.

Fits of pain along the spine and in the extremities produced by movement.—This pain, as I think, must be regarded as the most prominent symptom in acute spinal meningitis. It may be confined to the region of the spine, but more generally it shoots into the extremities, into the legs especially. As a rule, it does not shoot beltwise round the trunk. It is brought on by any movement of the trunk, and, in great measure at least, it may be prevented by avoiding such movement. It is often brought on also by moving one of the extremities, the pain in this case beginning in the limb, and extending thence to the spine. It seems to depend, in part at least, upon the same cause as the pain of pleurisy, viz., the dragging of an inflamed and therefore exquisitely tender serous membrane, and its character is certainly more like the pain of pleurisy than of rheumatism (to which it has been likened), for it occurs in the same sharp, sudden, breath-stopping catches.

Fits of muscular stiffness in the painful parts along with the pain.—It is usual to regard this stiffness as analogous to the spasm of tetanus: it is necessary, as I believe, to look upon it as expressing an instinctive act of muscular contraction, of which the object is to prevent pain by arresting certain movements which produce pain. The spine and extremities cannot be moved without causing pain: the stiffness prevents the pain by preventing the movement; this would appear to be the true view. This explanation, originally given by M. Dance as applying to the muscular stiffness in a case of acute spinal meningitis observed by him and recorded by M. Ollivier, applies perfectly to the muscular stiffness of the case which has been related as the text, and it applies, as I believe, with the same exactness to all cases of the kind. Indeed, I believe there can be no greater mistake than to confound the stiffness in question with the spasm of tetanus. This will be seen more particularly when speaking of tetanus: and here I will only say that tetanus in its most violent form is constantly present where there are no signs of spinal meningitis, and that, in the few cases in which such signs chance to be met with, it may be supposed that the inflammation is a consequence rather than a cause of the irritation which gives rise to the tetanic spasm—a consequence of the irritation in the vaso-motor nerves having proceeded until it has issued in paralysis of the vaso-motor nerves. Nay, after what has been said in the preliminary remarks, it is not impossible that the spinal meningitis which is occasionally associated with tetanus may have served to counteract the spasm rather than to cause it. At any rate, it is certain that spasm of the spinal muscles is not so marked a phenomenon in acute spinal meningitis as in tetanus, and that it is not to be regarded "comme indiquant positivement la phlegmasie des membranes de la moelle;" and it is, to say the least, highly probable that the muscular stiffness which simulates true tetanic spasm is in great measure an instinctive act of muscular contraction to prevent a movement which produces pain.

Intervals of complete or comparative freedom from pain and muscular stiffness so long as movement can be avoided.—These intervals are sometimes of considerable length, even for days. According to my own experience, indeed, the rule would seem to be that as long as the patient can keep still, so long is he, comparatively at least, free from pain and stiffness—a rule which is very different from that which obtains in tetanus.

Absence of paralysis.—The patient is weak, very weak, and he seems to be paralyzed, but in reality he fears to move because movement brings back the pain. "Les mouvements, qui sont en quelque sorte enchaînés par la douleur, ont moins de force, mais ils ne sont point paralysés." (Ollivier, p. 595.) Let this fear be forgotten, and it is possible not only to sit up, but to get out of bed and stand, as happened in the final agony of the patient whose case I have given. This power of movement has been noticed in several cases, of which one is related by Ollivier, and another referred to; and I believe it would be witnessed in all cases of *uncomplicated* acute spinal meningitis in which the fear of suffering pain from movement was not the one absorbing feeling.

Some exaltation of sensibility.—In the case which I have given there was some exaltation of sensibility as to touch, pain, and differences of temperature, but to no very marked degree; and this would appear to be the rule in cases of the kind. It would seem, indeed, that numbness is a purely accidental symptom, which is never present unless the substance of the cord is implicated in the meningeal inflammation.

Loss of power over the bladder.—In acute spinal meningitis, when the symptoms are fully developed, this particular symptom is scarcely ever absent, if ever. Before this time it may be absent, as it was in the case on which I am commenting; but this absence must certainly be looked upon as the exception rather than the rule. Not unfrequently the inability to empty the bladder is preceded by a state of irritability which makes it necessary to pass water almost incessantly.

Partial loss of power over the bowel.—On this point M. Ollivier makes a remark which is certainly true: "Je ferai remarquer que l'abolition des fonctions de la vessie persiste toujours au même degré depuis le commencement jusqu'à la fin, tandis qu'il n'en est pas de même pour l'intestin, puisqu'il y a assez souvent des garderobes naturelles dans les derniers temps de la maladie." (Vol. ii. p. 601.)

Absence of spinal tenderness.—This absence is certainly a common, if not a constant, feature of acute spinal meningitis. In some chronic cases, no doubt, there may be some local spinal tenderness, but on inquiry these prove to be cases in which the phenomena of spinal irritation are mixed up with those of spinal inflammation—in which the inflammatory affection is complicated with that condition of which, as will appear in due time, local spinal tenderness is the distinctive feature.

These are the points which may be regarded as of primary importance in comparison with those which have still to be considered, namely—absence of marked spasmodic symptoms, difficulty of mastication and deglutition, difficulty of breathing, no increased reflex excitability, no priapism, fits of perspiration, no active inflammatory fever, no marked "head-symptoms."

Absence of marked spasmodic symptoms.—The rigidity which attends upon the paroxysms of pain has been seen to be in the main an instinctive act of muscular contraction to prevent a movement which produces pain, and there appear to be no other symptoms of a spasmodic character which occupy a conspicuous place in the history of spinal meningitis. Or if there be any such symptoms, these are in all probability confined, as were the jerks and starts in the case under consideration, to that early period of the disorder in which it may be supposed that actual meningeal inflammation was not developed—to the so called cold stage of the disorder probably.

Difficulty of mastication and deglutition.—This difficulty is often absent, and when present it is at most a trifling trouble comparatively. There is no true trismus as in tetanus; there is at most only stiffness which prevents the jaws from opening easily and moving freely. This stiffness, moreover, is late in making its appearance, whereas in tetanus trismus is one of the very first symptoms. In a word, difficulty of mastication and swallowing would seem to occur only in those cases of spinal meningitis in which the higher portions of the cord are implicated.

Difficulty of breathing.—This difficulty is always present in some degree, and especially during a paroxysm of pain and stiffness. In some cases, indeed, the movement of the chest may be actually suspended at this latter time, and death may happen from this cause, as indeed was the case in a patient whom I saw not long ago with Dr. Julius, of Richmond.

No increased reflex excitability.—This is not, perhaps, what might be expected theoretically: but, be the explanation what it may, the fact would seem to be that reflex irritability is not increased in acute spinal meningitis in the way in which it is ordinarily increased in tetanus. So far as I have been able to ascertain there would seem to be no material change in reflex excitability in the meningeal inflammation.

No priapism.—The cases in which erection of the penis would seem to be a symptom appear to be those in which the substance of the cord is affected rather than the membrane—cases too in which the seat of the disease is in the cervical and upper dorsal region rather than in the lumbar region. At any rate, it would seem to be the rule for the penis to be flaccid in uncomplicated cases of acute spinal meningitis.

Fits of perspiration.—As in tetanus these follow a paroxysm almost invariably, especially in the latter stages of its disease. Of this there appears to be sufficient evidence.

No active inflammatory fever.—Thirst is a frequent symptom throughout, and there may be at first some heat of skin, but in the most acute cases there is little or no active sympathetic fever. On the contrary, there is usually, even in the cases which have most claim to be considered as acute, a decided want of febrile reaction from the beginning to the end.

No marked head-symptoms.—In very many cases inflammation of the spinal meninges is only a part of a more general disorder in which the cerebral meninges are also implicated, and, therefore, "head-symptoms," of one kind or other will often enough be mixed up with the spinal symptoms; but in cases like the one under consideration, where the spinal meninges were alone inflamed, "head-symptoms" do not figure at all, or figure only as phenomena of very secondary importance. Upon this point there is no lack of evidence. Where spinal meningitis is chronic in its course its symptoms are often so mixed up with the protean symptoms of spinal irritation (of which more in due time) as only to be detected with great difficulty. It may be suspected that the meninges are affected by inflammation rather than by simple irritation if fits of pain and stiffness are produced by movement in the spine and extremities, and if there be at the same time no spinal tenderness, no paralysis, and no tingling or numbness; and this is all that can be said except this, that this suspicion will gather strength if there be chronic disease in the bones and ligaments of the spine. But it may be questioned whether long-continued contraction of the muscles of one or more of the extremities or of the cervical muscles can be reckoned among these symptoms, for such contraction is certainly common enough in cases where the only condition of disorder in the spinal cord or its membrane is one which, from the sudden way in which it begins and ends, and for other reasons as well, would seem to be one of simple irritation.

2. Post-mortem Appearances.—As Ollivier pointed out, the traces of spinal meningitis after death are met with usually, not in the arachnoid membrane, which is non-vascular, but in the subjacent vascular tissue. The arachnoid is so thin and transparent as to allow the vascular injection produced by the inflammation in the deeper structures to appear through it, and that is all. This injection is generally less evident on the surface of the cord than on that of the dura mater, because in the former place it is hidden by the effusion of turbid, sero-purulent, or purulent fluid in the space between the arachnoid and pia mater—in the space naturally occupied by the rachidian fluid—is hidden by an effusion which, before the arachnoid is opened, often causes the cord to have a swollen, opaque, yellowish-white, or yellowish appearance. Any fluid effusion is usually in this space, but sometimes there may be fluid, in this case often sanguinolent, in the space outside the dura mater, especially if there be disease in the bones or ligaments of the spine. Sometimes the rachidian space is obliterated here and there by inflammatory adhesions; sometimes the surface of the arachnoid is roughened or otherwise altered by calcareous or other deposits in patches: sometimes the opposed surfaces of the arachnoid are more or less adherent; but generally the surfaces of the arachnoid are smooth and free, and the inflammatory products are met with below this membrane, and not above it. Very often, also, the proper signs of spinal meningitis are mixed up with those of cerebral meningitis or

myelitis, or with those of disease in the bones or ligaments of the spine.

3. Causes.—The causes of spinal meningitis are often very obscure. In some cases it is rheumatism, or syphilis, or the suppression of some menstrual, hæmorrhoidal, or other habitual discharge, or the spreading of cerebral meningitis downwards, or of disease in the bones and ligaments of the spine inwards, which would seem to figure as a cause; in other cases it is a casual injury to the back, or a chill caught by lying on the back on the cold and damp ground, or some particular disease, as tetanus, chorea, or hydrophobia, to which blame appears to belong. In fact, the causes are legion, and it is impossible to connect spinal meningitis with any particular cause or set of causes.

4. Diagnosis.—One or two points of diagnosis have been mentioned incidentally when dealing with the symptoms of spinal meningitis, and with these it is best to be content at present, for before this matter can be gone into advantageously materials must be had which can only be forthcoming when the phenomena of myelitis, spinal congestion, and other spinal maladies have been passed in review.

5. Prognosis.—Acute spinal meningitis is, without doubt, a very formidable and fatal disease. There are, indeed, few well-authenticated instances of recovery on record, and by some it is doubted whether there be any. Life may be cut short in four or five days, or it may be prolonged to twenty or thirty days, but not often—not often, indeed, beyond six or seven days. In the subacute and chronic forms of the disease, the prognosis is of course less gloomy, but even here it is far from cheering.

6. Treatment.—In all cases of spinal meningitis, rest in the recumbent position, more or less strictly enforced according to the urgency or leniency of the symptoms, is indispensable, the best position, perhaps, being not strictly on the back, but rather upon the side, and with the limbs a little lower than the back, so as to favour the draining away of blood from the congested parts, and at the same time, to facilitate the use of the local applications to the spine which may be necessary. Upon this point there can be little or no difference of opinion; upon all other points, in all probability, few will think alike. For my own part, I should be disposed to place most confidence in iodide of potassium and opium, with the local application of ice to the back in acute cases, and to bichloride of mercury, with counter-irritation in one form or other to the spine, in chronic cases. At the same time, I am inclined to think that the present fashion has set very unwarrantably against the old practice of giving calomel and opium, so as to affect the gums slightly and speedily, and of using local, if not general, bleeding in acute inflammatory disease. There can, I think, be little doubt as to the marked influence for good of calomel and opium in acute inflammation of serous membranes; and it would require very little persuasion to induce me to prefer this mode of treatment to that by iodide of potassium in acute spinal meningitis; and, further, I can readily believe that in such a case recovery would

be promoted by a judicious abstraction of blood. I have twice seen symptoms, so closely resembling those of acute spinal meningitis as not to be distinguished from them, disappear coincidently with the occurrence of local hemorrhage, once from piles, once in the form of menstruation; and I can well believe that a similar result might be furthered by the application of leeches around the anus or to the cervix uteri—to these parts rather than to the back, because their vessels would seem to communicate more directly with the deep spinal vessels. It is very probable, however, that the time will soon pass in which depletion in any form, or depressing remedies of any kind, are required, and that the indications will rather be towards brandy, or ammonia, or ether, than towards the remedies which have been mentioned, for all acute diseases of the spinal cord would seem to have a rapidly devitalizing influence upon the system. In acute cases the catheter may be necessary to empty the bladder; in chronic cases, aching and stiffness of the limbs may point to friction and shampooing as likely means of relief. In every case there is sure to be some peculiarity to which attention must be directed if the plan of treatment be all that it ought to be; and, in short, every case must be treated on its own merits.

II. MYELITIS.

Myelitis, or inflammation affecting the substance without involving the membranes of the cord, is a well-defined and not very uncommon disease. It may occur in an acute or in a chronic form: it may be general or partial: and, to say the least, its features are quite as well marked and distinctive as those of spinal meningitis.

1. SYMPTOMS.—As an instance of acute myelitis, and as a text for what has to be said under this head, I take the notes of the case of a hospital patient under my care not long ago.

Case.—Charles K., a draper's assistant, twenty-six years of age, unmarried, a patient admitted into the National Hospital for the Paralyzed and Epileptic on the 9th of June, 1864.

(*a*) The chief symptoms complained of are paralysis and anæsthesia below the waist, a disagreeable feeling of tightness around the waist, inability to pass water, involuntary stools, and pain in the left side of the chest. Above the waist, the power of movement and the power of sensation are natural; below the waist, all the voluntary muscles are entirely paralyzed, and the sensibility to pain, to tickling, to differences of temperature, as well as to touch, are completely lost. Pressure along the spine is felt above the point to which the anæsthesia reaches, but not below it, and where felt the patient bears it without wincing. In other words, there is no tenderness on pressure in that part of the spine which preserves its sensibility. The feeling of warmth produced by passing a sponge soaked in moderately hot water along the spine is felt above the point to which the anæsthesia reaches, but not below it, and, where felt, the feeling of heat is natural, except at the line of junction between the sensitive and insensitive parts, and there the feeling produced is that of burning. Moreover, the warm sponge produces the same feeling of burning all around the body in the course of this line of junction, and thus it is plain that this local over-sensitiveness to heat is not confined to the spine. No reflex movements are produced by tickling the soles of the feet. The alæ nasi work very much, the lips are somewhat dusky, the lower intercostal muscles are motionless and the accessory inspiratory muscles are in full work, the air passages (especially on the left side) are loaded with phlegm, the pulse is hurried and weak, the skin is moist and somewhat cooler than natural, and the voice is so low as to be scarcely audible. A cough of the feeblest sort is almost incessant, but the expiratory power at command is altogether insufficient to bring about the expectoration which is so much wanted. All appetite is gone, but food can be taken, and there is no thirst, or none to speak of. The urine, which is acid, and of the specific gravity of 1015, has to be drawn off by the catheter. There is no priapism. A stool has just passed without the patient being aware of it until his nose took account of the accident.

(*b*) A week ago, on awaking from a short nap, the patient found that his toes had gone to sleep, and that he had to "take long breaths." Instead of passing off, the feeling of tingling spread from the toes to the feet, from the feet to the legs, from the legs to the thighs, until it reached the seat, becoming less and less endurable as it spread, and being at last accompanied by a feeling of tightness around the waist and around the left instep, and by a state of restlessness which made it impossible to sit still for more than a moment at a time. After suffering in this way for a couple of hours, an attempt to pass water, which failed altogether, was followed by an almost intolerable uneasiness at the end of the penis, and by a sudden weakness in the legs which make it necessary to remain on the bed upon which he had fallen. Up to this time there had been no difficulty in standing or walking, not even in going up and down stairs. A friend of the patient's now present says: "I saw him on the evening of the day on which he was attacked, a couple of hours or so after he had been obliged to take to his bed. I thought he was suffering from severe rheumatic pains. For some hours those pains were excruciating. I had never before seen any one suffer so much. He tossed about in dreadful agony: he roared out with pain often, and when not roaring, he groaned." Having thus passed seven or eight miserable hours, he fell asleep and slept until breakfast-time next day. Upon waking in the morning he could neither move his legs nor empty his bladder; he had lost all feeling below the waist, and all the miserable feelings which had kept him in a state of continual unrest before he fell asleep were gone. On inquiring whether these feelings were of the character of pain, he says, "No, not exactly, worse than pain, one continued numb stinging feeling, as if the parts were asleep," so that the friend's words which have just been quoted must be taken as meaning not exactly what they seem to mean in this particular. For the six days preceding his admission to the hospital a state of imperfect priapism was apt to come on of itself, or to be brought on by introducing a catheter to draw off the water, and this is the only point remaining to be noticed here, for in other respects the condition seems to have remained stationary, except, perhaps, that a little ground was lost every day.

The patient seems to have come of a healthy family, and, though never very strong, to have himself always enjoyed tolerably good health. He was confined to the house for a few days about two months ago for "influenza," and this is the only illness of any kind he remembers to have had. He says, "I was fatigued by a long walk on the day I was taken ill, and for a month and more I had felt more tired in my back and legs than usual in an evening, and more rheumatic—less up to the mark;" and also, "My back always ached at the end of the day's work, and so did my legs, and I was always glad to go to bed soon, for in bed I was comfortable:" and besides these statements there appears to be nothing at all calculated to throw light upon the history of his present malady.

Jan. 10. Early this morning, after a sleepless night, a severe rigor commenced in the right arm, and then extended first to the back, and afterwards to the whole body. This rigor continued a full quarter of an hour, and was followed by profuse perspiration. During its continuance the paralyzed parts were very cold: after it had ceased the warmth returned, and brought with it a considerable mitigation of the cough and trouble of breathing. Indeed, after the establishment of reaction, difficulty of breathing ceased to be an urgent symptom, except for a moment or two after waking from an occasional and very brief doze. The anæsthesia in the trunk has mounted full an inch higher since yesterday, but it has not extended to either of the upper extremities. Priapism occurs frequently. The pulse is 150, the respirations are 36 in the minute.

11*th.* There has been no sleep in the night. The engorged condition of the lungs has gained headway, and the harassing suffocative cough has returned. Hiccough is frequent and distressing. Once during the day the passage of the catheter was obscurely felt, this being the first sign of feeling in this part since the commencement of the illness. The urine is decidedly acid. The electro-contractility and electro-sensibility of the paralyzed muscles is annihilated.

12*th.* For the last twenty-four hours the increased difficulty of breathing attending sleep has caused the patient to wake immediately if he for a moment forgot himself. "I can't breathe except I keep awake," he said in a voice scarcely audible; and also, "I hope I have not long to live." The passage of the catheter is still obscurely felt, and the escape of flatus and feces is perhaps not so entirely unfelt as it has been since the commencement of the illness. In other parts the anæsthesia, like the paralysis, remains as complete as ever. The urine is still acid, distinctly so. For the last twenty-four hours there has been no priapism, and scarcely any cough. At present hiccough is almost constant, the pulse is fluttering, the hands are cold and clammy, and, in short, the signs of the near approach of death are not to be mistaken.

13*th.* The patient lingered through the night, and died about daybreak; his mind unhappily remaining too clear to the very last.

The notes of the post-mortem examination are as follows:—

14*th*, 4.30 P.M. Rigor mortis is fully established everywhere. The dependent parts present considerable signs of suggillation, especially along the course of the spine, and there is incipient breaking of the skin on both the nates. The arachnoid covering of the cord everywhere is clear, smooth, and without any traces of inflammation. The outside of the lumbar enlargement is curiously nodulated. On making a longitudinal section, the whole substance of the cord, from the brachial enlargement to its inferior extremity, is found to be of a yellowish-red colour, softened in a remarkable manner, and in the lumbar region almost like cream in consistence. Several small patches of extravasated blood are scattered in the softened structure, these patches being undefined in outline, more numerous in the lumbar than in the dorsal region of the cord, and situated chiefly in the posterior columns. The red discoloration which has been mentioned is most marked in the neighbourhood of these patches. The examination did not extend further, the friends of the patient consenting to it only on condition that it should be thus partial.

15*th*. On examining some portions of the diseased cord under the microscope, the natural structure is found to be altogether broken down, and mixed up with blood corpuscles, exudation granules, and (in fewer numbers) pus-corpuscles.

With a view to arrive at a knowledge of the general features of myelitis, I select as the principal points for comment in this particular case the following: Paraplegic anæsthesia, ushered in by tingling or some similar sensation in the parts which eventually became anæsthetic; paraplegic paralysis, ushered in by uncontrollable restlessness; a disagreeable feeling of tightness around the waist and elsewhere; absence of pain in the spine or extremities—of pain produced by movement especially; absence of trismus and other spasmodic or convulsive symptoms; retention of urine; involuntary stools; absence of pain on pressure (spinal tenderness) in any part of the spine; increased sensibility to differences of temperature, by which moderately warm or iced water gave rise to a feeling of burning instead of the natural feeling over the vertebra which marks the upper limit of the myelitis; annihilation of reflex excitability in the paraplegic parts; priapism; acidity of urine; comparative voicelessness; impeded respiration; engorgement of lungs and other viscera; tendency to bed-sores; loss of electro-contractility and electro-sensibility in the paralyzed muscles; absence of "head-symptoms;" absence of fever.

Paraplegic anæsthesia, ushered in by tingling or some similar sensation in the parts which eventually became anæsthetic.—In this case the anæsthesia was developed suddenly during the first night's sleep; it was deep-seated as well as superficial; it implicated the sensibility to pain, tickling, and differences of temperature, as well as that of touch; it had a paraplegic distribution; and this would seem to be the rule in cases of acute myelitis. In chronic cases it is developed more gradually, and it may not extend to all the various forms of sensibility; moreover, it may in some instances be quasi hemiplegic instead of paraplegic; but the rule in acute cases appears to be what it is found to be in this. The anæsthesia seems to be usually ushered in by tingling or by some analogous sensation, disagreeable enough, but not amounting to actual pain. In this particular case the preliminary sensation was not pain, but an unbearable "numb stinging" as if the parts were asleep, with a feeling of tightness around the waist, and around one of the insteps. In acute cases it is right to speak of anæsthesia as ushered in by tingling or some similar sensation, but scarcely so in chronic cases. In chronic cases, indeed, these anomalous sensations may never exactly come to an end, because in these cases the destruction of sensibility may never get beyond numbness—may never reach nearer to anæsthesia, that is to say, than dysæsthesia.

Paraplegic paralysis, ushered in by uncontrollable restlessness.—The paralysis was thus ushered in in the case under consideration, and in two similar cases which have come specially under my own notice—by restlessness, and *not* by any more marked tremulous, convulsive, or spasmodic symptom. Neither does it appear that a different rule obtains in other cases, acute, subacute, or chronic. In the great majority of cases, no doubt, the paralysis has a paraplegic form, but in a few cases it is not so. In the great majority of cases, the paralysis is accompanied by numbness, but not absolutely in all. Sometimes, for example, as in the case in which the paralyzing lesion is limited to a portion of one lateral half of the spinal cord—the case about which enough was said in the preliminary remarks—there is paralysis without numbness on one side, and numbness without paralysis on the other side. Several cases of this kind are on record, and the number of them which I have myself met with is sufficient to convince me that they are scarcely to to be looked upon as out of order and exceptional. Sometimes, also, as in the case where the paralyzing lesion is confined to a portion of one of the anterior columns, the paralysis may be divorced from numbness, and not only so, but it may be hemiplegic in its distribution; and in such a case it may, in fact, be no easy matter to say whether it is dependent upon a cerebral or upon a spinal cause. In some cases, also, the paralyzing lesion may be so localized as to affect only, or chiefly, an arm on one side and a leg on the other side. Usually, however, the paralysis is distinguished by being associated with numbness, and by being paraplegic in its distribution.

A disagreeable feeling of tightness around the waist and elsewhere.—A feeling of circular constriction around the trunk, or around some part of an extremity, around the trunk especially, is so common as to deserve to be considered as an almost constant symptom in myelitis. I do not recall a case, acute or chronic, in which it was entirely absent at all times.

Absence of pain in the spine and extremities—of pain produced by movement more especially.—In chronic cases of myelitis, Dr. Brown-Séquard speaks of "a constant pain in the part of the spine corresponding to the upper limit of the inflammation of the cord" as a characteristic symptom; but I question very much whether this statement is in accordance with well-sifted clinical facts. Pain, either in the spine or elsewhere, is not mentioned, for example, in the nineteen cases, acute or chronic, given by Ollivier, except in three, and of these three the myelitis was complicated with meningitis in two and in the one remaining the symptoms justify the presumption (and there was no post-mortem examination to set it aside) that the same complication existed. At any rate, it is certain that there is not in uncomplicated myelitis that severe pain in the back and limbs which is brought on or aggravated by movement in spinal meningitis.

Absence of spasmodic symptoms.—Ollivier speaks of continuous contraction of the limbs as being met with "assez ordinairement," in chronic myelitis; but the cases cited by this excellent observer do not substantiate this statement. Thus, out of nineteen cases of myelitis, complicated and uncomplicated, acute and chronic, there are three only in which these contractions were present, and not one of the three can be cited correctly as a case of myelitis. In one of the three (No. 87) the sensibility was intact, and the disease of the cord confined almost exclusively to the anterior column; in another (No. 93) there was obtuse sensibility, and the disease was chiefly in the gray matter; and in the third (No. 94) sensibility remained, and there was no post-mortem examination to show what the disease in the cord really was. In each one of these cases, also, there were "head symptoms" which do not figure in uncomplicated myelitis. Again, prolonged contraction of the extremities is a not unfrequent symptom in cases in which there is neither myelitis nor spinal meningitis—cases which properly come under the head of "spinal irritation," and about which more will have to be said in another section of this article. In these cases the contraction, instead of pointing to inflammation of the cord or its membranes, is really no more than one of a series of so-called hysterical phenomena. It is a sign of functional disorder only, and that it is so is evident (these among other proofs) in the sudden and complete way in which it passes off, as well as in the fact that it does not leave behind it any permanent organic traces. It depends as it would seem, upon a state of irritation in some part of that track in which irritation gives rise to prolonged spasm—a state issuing, it may be, now and then in inflammation, but in itself, so far as the condition of the blood-vessels is concerned, diametrically opposed to inflammation. Nay, even in those exceptional cases of myelitis in which there is increased reflex excitability in the paralyzed limbs, it is difficult to connect these spasmodic symptoms with the inflammation. Dr. Brown-Séquard says: "When the dorso-lumbar enlargement is inflamed, reflex movements can hardly be excited in the lower limbs, and frequently it is impossible to excite any. On the contrary, energetic reflex movement can always be excited when the disease is in the middle of the dorsal region, or higher up." And again, when speaking of the reflex convulsions which may happen in the cases where the inflammation is in the middle of the dorsal region or higher up, he says, "Convulsions do not take place at the beginning of the inflammation, but some time after, and they recur by fits for months and years after." And this is precisely what happens. In a word, the truth would seem to be that these reflex spasmodic movements must be referred, *not* to inflammation in the lumbar enlargement of the cord, nor yet to inflammation higher up in the cord; for in this case, to repeat what has just been said, "the convulsions do not take place at the beginning of the inflammation, but some time *after*, and they recur by fits for months and years *after*." They happen, as it would seem, *after* the inflammatory disorganization has interrupted the continuity of the cord, and produced a state of things analogous to that of a guinea-pig, or other animal, whose spinal cord has been cut across experimentally—a state of things of which increased reflex excitability in the paralyzed parts is one of the consequences. Nor is a different conclusion to be drawn from the occasional presence in the paralyzed muscles of a state which is analogous to or identical with the "late rigidity" of Todd. This "late rigidity" is very different to "early rigidity." In "early rigidity" the electro-motility of the muscles is increased, and the muscles relax during sleep, and to a less degree under the influence of warmth. The muscular contraction is evidently of the nature of spasm. In "late rigidity," on the contrary, the muscles are wasted, their electro-motility annihilated, and sleep or warmth do not tell in causing relaxation. This form of muscular contraction, indeed, if not identical with rigor mortis, is, as it would seem, more akin to this state than to spasm. In the case of myelitis which serves as my text, there was none of the painful muscular rigidity produced by movement which is so prominent a symptom in spinal meningitis. There was, indeed, no spasmodic symptom of any kind, with the exception of the rigor which ushered in the extension of the disease on the day after the admission of the patient to the hospital. And this absence of spasmodic symptoms would seem to be the rule in all cases of myelitis, acute or chronic. In children, it is true, myelitis may be ushered in by convulsion—in which case the convulsion manifestly represents the rigor which may usher in myelitis in adults, and as manifestly belongs to the precursory stage of irritation, and not to the state of actual inflammation—but even in children, unless there be some meningeal complication along with the myelitis, this preliminary convulsion would seem to be a rare phenomenon.

Want of control over the bladder.—This appears to be the earliest as well as the most constant of the symptoms of myelitis. It usually depends upon paralysis of the accelerator urinæ and compressor urethræ, but now and then it would seem to be connected, for a while at least, with a state of spasm in the latter of these muscles, in which case the dribbling away of the water or the introduction of a catheter will sometimes produce marked reflex spasms in the legs. I remember one case—a case in which the myelitis seemed to have interrupted the continuity of the cord high up in the back—where an attempt to use the catheter often gave rise to strong reflex spasms in both legs, and to a state of spasm in the urethra strong enough to prevent the passage of the instrument.

Want of control over the rectum.—In myelitis paralysis of the sphincter ani is usually associated with paralysis of the accelerator urinæ and compressor urethræ. Now and then also, the sphincter ani, instead of being paralyzed, may be in a state of reflex spasm: thus, in the case to which I have just referred, the administration of an enema was sometimes rendered impossible by the spasm set up in the sphincter ani and in the femoral muscles by the pipe.

Absence of local spinal tenderness.—As in spinal meningitis, so in myelitis, absence of tenderness on pressure in any part of the spine would seem to be the rule, and not the exception. Ollivier, speaking of pain in the back in myelitis, says, "Elle n'est jamais rendue plus aiguë par la pression," and my own experience in the matter is, without question, to the same effect.

Altered sensibility to heat and cold by which a feeling of burning is felt when a sponge soaked in moderately warm water or a piece of ice is applied to the spine immediately above the seat of inflammation.—Several years ago it was pointed out by Mr. Copeland that, when a sponge soaked in water a little above the temperature of the blood was passed along the spine from above downwards, it gave rise to the natural feeling of heat until it reached the inflamed part, and that then this feeling changed to that of burning; and more recently Dr. Brown-Séquard has shown that a similar result is arrived at by passing a piece of ice down the spine, the natural feeling of cold being felt until the inflamed part is reached, and then an unnatural feeling of burning. In many cases, no doubt, all this would seem to be quite true, but not in all, perhaps not in the majority: and therefore it is impossible to look upon the feeling of burning thus produced as more than an occasional occurrence in myelitis.

Annihilation of reflex excitability.—What has to be said under this head has been anticipated when speaking of the absence of spasmodic symptoms in myelitis. It has indeed been seen to be the rule for all reflex movements to be annihilated or greatly weakened in the paralyzed parts, and that the apparent exceptions to this rule are to be explained, not by referring the increased reflex movement to myelitis, but by supposing the inflammatory disorganization to have interrupted the continuity of the cord and produced a state of things analogous to that of a guinea-pig whose cord has been cut across for experimental purposes.

Diminution of electro-motility and electro-sensibility in the paralyzed muscles.—Except in those few, very few, cases in which the reflex excitability is increased, the electro-motility and electro-sensibility of the paralyzed muscles are invariably diminished in myelitis. Where the reflex excitability is increased the electro-motility may also be increased, and so also may the electro-sensibility, but more generally the increase in the former property is without a corresponding increase in the latter. The paralyzed muscles are wasted in almost all cases, and relaxed also, except in those few cases in which the paralysis has lasted for a very long time and become associated with that state of "late rigidity" which, sooner or later, is always found to seize upon paralyzed muscles. Marshall Hall noticed the impairment of irritability in spinal paralysis, and was of opinion that an opposite state of things existed in cerebral paralysis. As was pointed out by Todd, however, this supposed distinction between spinal and cerebral paralysis does not hold good, the simple fact being that in the great majority of cases of cerebral paralysis the irritability of the paralyzed muscles, instead of being increased, is either not materially altered or else more or less diminished—most generally diminished in a very marked degree. In a word, the investigations of this very accomplished physician show most clearly that in cerebral paralysis the irritability of the paralyzed muscles is only increased in those comparatively few cases in which the paralysis is associated with "early rigidity."

Priapism.—It is difficult to attach any diagnostic value to this symptom. As in acute spinal meningitis, so in acute myelitis, it is sometimes present and sometimes absent, less frequently present in the latter affection perhaps than in the former.

Frequent alkalinity of the urine.—Dr. Brown-Séquard says: "One of the most decisive symptoms in myelitis is alkalinity of the urine. There is no patient attacked with myelitis in the dorsal region of the cord whose urine is not frequently alkaline. At times, especially after certain kinds of food, the urine is acid, but the alkalinity soon returns." And no doubt the urine is very generally alkaline in myelitis, especially in those cases in which the paralysis of the bladder has led to secondary disease of this organ; at the same time, as in the case under consideration, the urine is too often acid to make it possible to insist upon alkalinity of the urine as a necessary feature in myelitis.

Dyspnœa.—Difficulty of breathing was a very urgent symptom in the case which serves as my text, and so it must be in every case where respiratory muscles are so gravely implicated in the paralysis, and where the lungs are so much engorged. Indeed, the usual way in which myelitis proves fatal is by compromising the sufficiency of the respiration. Now and then, especially when chronic inflammation affects the higher regions of the cord, the difficulty of breathing may occur in paroxysms not unlike those of asthma, but usually the difficulty shows itself rather as simple shortness of breath—shows itself in a way which supplies another proof of the absence of the spasmodic element in the history of myelitis.

Want of power in the circulation.—There is little or no sympathetic fever in the most acute form of myelitis; and in the ordinary chronic forms, the feeble pulse, the œdematous condition of the paralyzed extremities, the disposition to passive engorgement in the lungs and elsewhere, and other symptoms of like meaning, show very plainly that the state of the circulation is eminently asthenic. It would even seem as if there were something in the very fact of myelitis which has a positive influence in subtracting power from the circulation—which exercises a devitalizing influence upon the system generally.

A tendency to bed-sores, wasting, and other signs of defective nutrition in the paralyzed parts.—Sooner or later, generally at a very early date, a marked disposition to bed-sores in places where paralyzed parts are subjected to pressure is apt to show itself in myelitis, and so also are other signs of defective nutrition in the same parts, such as œdema, dryness and scurfiness of the skin, and a wasted and flabby state of the muscles. So marked, indeed, is this impairment of nutritive power in these paralyzed parts, that it is only by very great care that bed-sores and the other lesions which have been mentioned can be prevented.

Absence of head symptoms.—In cases where acute myelitis attacks the higher portions of the cord, there may be, and there in all probability will be, various "head symptoms"—vertigo, singing in the ears, grinding of the teeth, delirium, convulsion, coma, or others—but these cases, to say the least, are not common. Whether acute or chronic, indeed, myelitis is much more apt to attack the lower portions of the cord than the upper, in this respect differing from spinal meningitis; and when it attacks the upper portions of the cord, and its symptoms present cerebral complications, the chances are that the case is not simple myelitis, but myelitis with more or less spinal meningitis in addition.

When the cord is affected generally, the symptoms of myelitis will not differ greatly from those which are present in the case which has been given; when the inflammation is more localized, the symptoms will vary accordingly. If, for example, the inflammation be limited, as it usually is, to the lumbar enlargement of the cord, the level of the paralysis and anæsthesia will be proportionably low down; and if the extreme end of the cord only be affected, it is possible that the legs may escape altogether, and the bladder and anus be alone at fault. As indeed the level of the inflammation in the cord falls or rises, so must the level of the paralysis and anæsthesia fall or rise also. Exaggerated reflex movements in the inferior extremities will also (in all probability) be associated with the paralysis and anæsthesia, if the lower parts of the cord be sound and the inflammation confined to a portion of the cord higher up. Again, the symptoms which are present when the inflammation is limited to a part only of the thickness of the cord will be different in many respects from those which are met with when the whole thickness is affected. If, for example, a portion (the upper half-inch of their course excepted) of the anterior columns be affected solely, there would be paralysis without anæsthesia; or if the posterior columns were alone affected, there might be inco-ordination of movement and some hyperæsthesia instead of paralysis and anæsthesia. In short, the variations of symptoms, which occur where myelitis is restricted to particular parts of the cord, can only be properly intelligible to him who has clear notions respecting those physiological matters which were glanced at in the preliminary remarks—which were then glanced at chiefly in order to avoid perplexing physiological digression and discussion in the present place among others. I will, therefore, assume that what was said in the preliminary glance at some points in the physiology of the spinal cord, will serve to explain sufficiently the variations of symptoms which may be expected to exist when the integrity of particular parts of the spinal cord is destroyed by myelitis or in any other way: and, for the rest, I will only say that myelitis may be chronic and subacute as well as acute in its course, and that these several varieties interblend insensibly the one with the other.

2. POST-MORTEM APPEARANCES.—Myelitis may result either in softening or in hardening of the spinal cord. Most frequently the cord is broken down, reduced to a yellowish or reddish cream-like

consistence; the colour, derived from the admixture of pus or blood-corpuscles, being more yellow or more red according as the one or the other of these corpuscles predominate. This softening may affect the whole thickness of the cord, or certain parts more than others, the gray matter especially; it may extend from one end of the cord to the other, or it may be confined to certain regions, in which latter case the part most likely to be affected is the lumbar enlargement; and it would often seem to have its starting-point in the central gray matter, which is the most vascular part of the cord. In the first stage of myelitis this central gray matter has a rosy or vinous tinge, which is not natural to it; it is plainly more vascular than it ought to be; and, in short, it has undergone the very same change which is met with in the gray matter of the brain in encephalitis. Sometimes the spinal cord is considerably swollen, and sometimes the surface may have a nodulated appearance in certain parts, from the membranes having yielded at these points to the blood which may have escaped, or to the pus which may have collected, underneath. Not unfrequently small collections of blood are met with in the softened nerve tissue, especially in the position of the central vessel, so that the first impression upon opening the cord may be that of hemorrhage rather than that of myelitis. One remarkable feature of inflammatory softening, says Dr. Todd, is that "it exhales a marked odour of sulphuretted hydrogen, and so indicates a rapid advance of putrefaction;" and again, "It is a fact deserving of attention that the substance of the spinal cord softens very rapidly after death, the lapse of half an hour, during which the nervous substance has been exposed to the air, often producing a manifest alteration." Indeed, there are reasons for believing that the amount of disorganization met with in the cord after death does not necessarily represent the exact amount which existed during life, and that a cord which is found to be broken up after death almost utterly, may have retained during life sufficient integrity to allow of the transmission of certain sensitive and motor impressions. On this view the return of slight sensation in the urethra and rectum shortly before death, and the preservation of the power of moving and feeling in the arms, which were noticed in the case which serves as my text, are not altogether unintelligible.

Induration, the other result of myelitis, is looked upon by some as a stage always preceding softening, but it would rather seem to mark, as Ollivier supposed, a less acute form of inflammation. In it the fibrinous products of the inflammation seem to have been more organizable. The cord thus indurated varies greatly in appearance; it may be almost as pale, bloodless, crisp, and hard as cartilage; it may be more or less red and vascular, and proportionably softer; and in either case, when examined under the microscope, its proper tissues are found to be broken up and destroyed almost as effectually as they are when the cord is softened. A cord which is indurated has usually a shrunken appearance, but it may be swollen considerably. There is no doubt an induration of the cord, as well as a softening, which cannot be referred to myelitis, and which must not be confounded with that which is the result of inflammation; but I must not stay to point out the differences, nor yet to do more than say that in myelitis there will in all probability be found, in addition to the signs which have been indicated, engorgement of the lungs, kidneys, and other viscera, possibly more marked vascular changes, with bed-sores, œdema, dry and scurfy skin, wasted muscles, and other signs of defective nutrition in the paralyzed parts.

3. Causes.—Nothing very much to the point can be said under this head, and the only remark I feel called upon to make is this, that as in spinal meningitis a rheumatic habit has been found to figure more or less conspicuously among the causes of the malady, so here a like position would seem to be due to a strumous habit. I would also confess to a growing impression that myelitis may not unfrequently be connected more with excess of sexual indulgence than with any other single cause, but I cannot say that this impression has yet taken the form of a definite conviction.

4. Diagnosis.—In dealing with the symptoms of myelitis it has been shown that these are very different from those of spinal meningitis—so different as to make it difficult to confound them, if only moderate care be taken in realizing them. In spinal meningitis the most prominent symptom is pain in the back and extremities, produced or aggravated by movement; in myelitis pain of any kind has scarcely a title to be reckoned among the symptoms, pain produced by movement certainly not. In spinal meningitis the sensibility is somewhat exalted, in myelitis it is abolished. In spinal meningitis there is muscular weakness, and the muscular movements are fettered by pain, but there is no true paralysis; in myelitis paralysis is the symptom of symptoms. In spinal meningitis there is a state simulating trismus and tetanus, a state of muscular rigidity half voluntary as to its character, of which the object is to prevent certain movements which give rise to pain; in myelitis the muscles are limber, and there is usually an utter absence of any symptom akin to tremor, convulsion, or spasm.

Nor need the symptoms of common paraplegia (resulting from chronic myelitis) be confounded with those of locomotor ataxy. In common paraplegia there is paralysis more or less marked of the lower extremities, and the nutrition and irritability of the paralyzed muscles are, as a rule, unmistakably impaired; not so in locomotor ataxy. In common paraplegia the paralysis extends to the bladder and sphincter ani, and the sexual power is greatly weakened, if not altogether abolished; not so, or not to anything like the same degree, in locomotor ataxy. In common paraplegia the characteristic neuralgic pains of locomotor ataxy are wanting, and numbness is nothing like so prominent a symptom as in the ataxic disorder. In common paraplegia, where walking is possible, the gait—instead of being precipitate and staggering, the legs starting hither and thither in a very disorderly manner, and the heels coming down with a stamp at each step, as in locomotor ataxy—is hampered and slow, each leg being brought forward with evident difficulty, even with the help of an upward hitch of the body on the same side, and the part of the foot first coming in contact with the ground being, as a rule, not the heel, as in ataxy, but the toes. In common paraplegia impairment of sight or hearing, or strabismus, or ptosis, or injection of the conjunctivæ, or contraction of the pupils, frequent if not constant symtoms in locomotor ataxy, form no part of the history. In fact, in these respects, and in others of minor importance which might be mentioned, the histories of common paraplegia and locomotor ataxy are so different that it is not easy to see how, with only a moderate amount of care, the two disorders can be confounded.

Now and then, it is true, instances occur in which it is not so easy to distinguish this gait of common paraplegia from that of locomotor ataxy—cases in which the weakened muscles contract somewhat spasmodically when put in action, and in which there is often reason to believe that the membranes as well as the substance of the cord are affected, but, as a rule, the gait in common paraplegia and in locomotor ataxy is sufficiently characteristic to make it difficult to confound these two affections.

In cases where the myelitis is confined to the posterior columns of the cord, the symptoms will be those of locomotor ataxy rather than those which have been ascribed to myelitis; for, so far as the production of symptoms is concerned, it is of no moment whether the disease disorganizing the posterior columns be inflammatory or non-inflammatory, acute or chronic; and in other cases of local myelitis symptoms are sure to be present which cannot fail to lead to a correct diagnosis, if what was said in the preliminary remarks upon the physiology of different parts of the spinal cord be borne in mind in interpreting them. Indeed, with what is now known of the physiology of the spinal cord, there need not be much difficulty in determining the whereabouts of local mischief in the cord.

That myelitis cannot well be confounded with other spinal disorders—spinal congestion, tetanus, spinal irritation, and the rest—will be seen readily enough when a clear idea of these disorders has been realized, and only then; and this being the case, it is best to waive these questions in diagnosis until the fitting opportunities for dealing with them present themselves.

5. Prognosis.—Acute myelitis affecting any considerable extent of the spinal cord is, without doubt, a very grave disorder. It may be fatal in fifteen or twenty hours, and it is seldom that life is prolonged beyond the end of the second week. Instances of recovery are on record, it is true, but these are very few in number, and of them there is, perhaps, no single one in which the correctness of the diagnosis may not be impugned. Even chronic myelitis is a very grave disease; for though life may be prolonged, especially where the disease is confined to the lower part of the cord, the mischief once done seems to be in a great measure irremediable. At the same time it is only right to say that of late years the results of treatment have been much more satisfactory, and that it is possible now to hope where there was little room for hoping formerly.

6. Treatment.—There appears to be little room for what is called active treatment even in acute myelitis. The inflammation is evi-

dently of a very low type, and, reasoning from what is known of its beneficial action in erysipelas and in some other low forms of inflammation, it seems to me that sesquichloride of iron would be likely to be of more real service than iodide of potassium. Indeed, I should be disposed, until I know of a better plan, to trust chiefly to full doses of this preparation of iron, to food and wine in no stinted quantities, and to the position recommended by Dr. Brown-Séquard for draining away blood from the spine—a position in which the patient is made to lie upon his abdomen or side, with his hands and feet in a somewhat dependent position.

With respect to the good or bad effects of belladonna, or ergot, or strychnia, it is not very easy to arrive at a satisfactory conclusion. I agree with Dr. Brown-Séquard, in thinking that belladonna and ergot may have the effect of counteracting a hyperæmic condition by causing contraction in the vessels, and that the vessels of the spinal cord may, perhaps, respond most readily to their action, but not as to the indication for employing these remedies. Pain and spasm are, to Dr. Brown-Séquard, signs of hyperæmia: to me, except the pain produced by movement, they are signs of irritation only—of a state which is connected, not with hyperæmia, but with anæmia, a state of contraction of the vessels which may pass into relaxation, but which need not necessarily do so; and, therefore, to me pain and spasm, instead of being indications for the employment of belladonna or ergot, are in very deed contra-indications. Nor can I agree in thinking that strychnia acts by increasing the amount of blood in the spinal cord and in its membranes, and that on this account it is contraindicated in hyperæmic conditions of these parts. Strychnia, without doubt, produces tetanic spasms and other unequivocal signs of spinal irritation, but it is begging the question altogether to suppose that the strychnia increases the amount of blood in the cord and its membrane, that this increase of blood augments the vital activity of the cord, and that the spasms and other signs of irritation attest this augmentation of vital activity. Indeed, so far from this being a necessary conclusion, all the evidence pointed out in the preliminary remarks, as it seems to me, points in the opposite direction, and connects the state of irritation of which the spasms are the signs, not with a hyperæmic condition, but with an anæmic; and most assuredly I know of nothing in the history of myelitis or spinal meningitis which is calculated to invalidate this conclusion. Moreover, the investigations of Dr. Harley upon the action of strychnia upon the blood go to show that this action is really equivalent to loss of blood in that it directly interferes with the proper arterialization of the blood. In a word, I cannot find any fundamental difference between the action of belladonna, ergot, and strychnia upon the bloodvessels, neither can I understand why, strychnia, properly used, might not be of as much service as belladonna or ergot, in lessening a hyperæmic condition of the cord. For my own part, however, I confess to a feeling which makes me hesitate to employ either belladonna, or ergot, or strychnia in myelitis, or in any analogous condition, until I know more of their action, or until I have more unequivocal empirical evidence of the good resulting from their use.

In chronic cases the one grand indication of treatment, as it seems to me, is to improve the nutrition of the cord, and the medicine best calculated to carry out this indication, cod-liver oil, sesquichloride of iron, phosphorus in one form or other, arsenic, and possibly bichloride of mercury, which latter preparation, when properly used, I believe to be tonic and antiseptic in a high degree, and in many respects much more analogous in its action to arsenic than to any of the photo-compounds of mercury in common use.

The local means for promoting the recovery of the paralyzed muscles are certainly of not less importance than the general means, possibly of much greater importance, and these local means are very various. The efficacy of frictions and shampooings appears to be indisputable. The efficacy of proper movements can only be doubted by those who are unacquainted with the results arrived at by the "movement cure," and by systematic movements of one kind or another, with or without the help of mechanical apparatus. The efficacy of faradization has been abundantly proved, and there is good reason to believe that this is not the only mode of using electricity which will be of great service; that in fact statical positive electricity, or the interrupted galvanic current, or the application of the galvanic current in such a way that the paralyzed nerve is acted upon chiefly by the positive pole—a mode of using electricity about which I have spoken elsewhere, and which I have used extensively during the last three or four years—will often be of great service in proper cases. Indeed I should think that the treatment was wanting in very essential particulars if these local means, one and all, were not associated with the general means of treatment, and employed systematically and perseveringly; and especially I should regard it as a great blunder if these local means were deferred so as to allow the paralyzed muscles to lose what when lost is not easily recovered—that is, their irritability and healthy organization.

There are also other local measures which are of great service in the treatment of paralysis, and one of these to which I am disposed to attach especial importance is to protect the paralyzed parts from cold. In many cases, as is well known, these paralyzed parts are cool, and in not a few instances, where the paralysis is incomplete or associated with early rigidity, this paralysis and rigidity is greatest when these parts are coldest. For example, it is no uncommon thing for a partially hemiplegic patient whose paralyzed fingers are contracted, stiff, and altogether useless when acted upon by cold, to be able to open his hand and use his fingers with comparative freedom when the hand is warm in bed, or placed in a warm bath, or held a while before the fire. At any rate, I have long been satisfied that the well wrapping up of the paralyzed parts in woollen or silken or India-rubber coverings is an important help in treatment.

It would also seem that good of the same kind, much good, may be got from an exhausting apparatus made on the principle of Junot's boot. The effect of such an apparatus, properly used, is to make the paralyzed parts warmer at the time, and to enable them to preserve this warmth for a considerable time—to produce a change in the circulation, which must have a good effect upon the nutrition and irritability of the paralyzed muscles.

It is also more than probable that electricity may be of service in improving the condition of the circulation in the paralyzed parts, for an increased feeling of warmth in the paralyzed parts is the result of faradizing these parts, or of electrifying them with statical electricity; indeed I have been more than once disposed to think that the beneficial effects of electricity in the resuscitation of paralyzed parts are as much brought about indirectly by changes produced in the circulation as by changes wrought directly in the nerves and muscles.

As regards the necessity for tenotomy and the use of orthopædic apparatus in certain cases, it is difficult to speak to any good purpose. I shall have to refer to these subjects when speaking of infantile paralysis, and here I will only say, that in many cases, in children especially, the cure will be greatly facilitated by tenotomy and orthopædic apparatus, and that it is not always easy to decide between the cases in which these measures are desirable and those in which they are not desirable.

III. Congestion.

Spinal congestion, or plethora spinalis, is not less definite in its history than myelitis or spinal meningitis; neither is it of less practical interest. In the sequel, indeed, it may appear, not only that spinal congestion is fully entitled to the place which has been assigned to it in the catalogue of diseases, but also that it really comprehends more than one spinal disorder which is now known under a different name.

1. Symptoms.—As an instance of well-marked spinal congestion, I take, in a condensed form, the notes of a case under my care not long ago.

Case.—Mary L., aged 28, but looking very much older; married, but never pregnant, was admitted into the Westminster Hospital on the 12th of June, 1866.

(*a*) With the exception of being able to turn her head on the pillow, and to move the fingers and toes a little, all power of voluntary movement appears to be wanting. The symptoms chiefly complained of are tingling in the tips of the fingers and toes, a dull, burning aching along the back and in the limbs, and a feeling of being "tired to death." If altered in anywise, the sensibility to touch, pain, tickling, and differences of temperature is somewhat more acute than natural. The spine is nowhere tender on pressure, but the dull, burning aching in this region is increased by the application of a sponge soaked in hot water. The soles of the feet may be tickled without giving rise to undue reflex movements. The bladder and bowels act properly. The mind is not at all affected. The state generally is evidently one of great exhaustion and prostration, without fever, the pulse being quick, unsteady, and very compressible, the respiration shallow and curiously interrupted by sighs.

(*b*) Three weeks ago menstruation, which had only just begun, was suddenly checked by an alarm of fire. This was shortly before bedtime. The next morning, after a very sleepless and miserable night, the state had become very much what it now is. Up to this time the patient had never been obliged to remain in bed a single day on account of illness. She had often been weak and ailing, and she had suffered a good deal at the menstrual periods from pain and weakness in the back and legs, and that is all. She also appears to have sprung from a tolerably healthy stock.

(*c*) Within the first fortnight after admission to the hospital, the tingling in the tips of the fingers and toes came to an end, and so did the aching in the back and limbs. A week later the arms, as well as the hands, could be moved a little. At the end of six weeks the legs remained almost as helpless as at first, but the arms and trunk had so far recovered power as to allow of a change from the lying to the sitting posture without any great difficulty. At the end of twelve weeks it was possible to get out of bed, and, with the help of a stick, to move to the table in the centre of the ward. On the 3d of December, five months after admission, the patient left the hospital convalescent. All this while the appetite was tolerably good, and the bladder and bowels acted properly. Now and then, in the progress towards recovery, especially about the menstrual periods, there were short relapses, in which the tingling in the tips of the fingers and toes, and the aching in the back and limbs came back, and the paralytic weakness of the muscles was almost as great as at first—in which the ground already gained seemed all but lost. Now and then, also, the nights were disturbed by a distressing state of shortness of breath, not amounting to asthma. Before the legs recovered power their muscles were somewhat wasted, but not considerably so; indeed, neither here nor elsewhere was the paralysis accompanied by any marked wasting of the muscles or by any appreciable impairment of electro-sensibility or electro-contractility. Moreover, any movement, whether active or passive, had always the effect of relieving rather than of increasing the aching in the back and limbs, when this symptom was present. The treatment pursued was chiefly rest, good living, hypophosphite of soda, nux vomica now and then in small doses, cod-liver oil, and faradization.

Assuming, as I well may, this to be a case of well-marked spinal congestion, I take as points of comparison between it and other cases of the kind, general and partial, these: suddenness of access; incomplete paralysis in a paraplegic form; no numbness; tingling in the tips of the fingers and toes; no exaggeration of reflex excitability in the paralyzed limbs; no want of control over the bladder and bowel; no spinal tenderness; aching in the back increased by warmth; pains in the back and limbs not increased by movement; no marked impairment of the electro-contractility and electro-sensibility, and no material wasting, of the paralyzed muscles; no feverishness; breathlessness; no bed-sores; proneness to relapses.

Suddenness of onset.—To be well, or comparatively well, on going to bed, and to be paralyzed in the morning, as in the case which I have given, is no uncommon thing in spinal congestion. It is indeed the rule rather than the exception for the illness to be spoken of as a "stroke" by the sufferer.

Incomplete paralysis in a paraplegic form.—Paralysis, often all but complete, but never quite so, and taking the paraplegic form, must be looked upon as a common symptom in spinal congestion. The paralysis is decidedly paraplegic in the end, and it may be so from the beginning, but not unfrequently one leg or one arm is affected before the other, and occasionally the leg and arm of the same side may for a short time be affected, as in hemiplegia, before the disease extends to the leg and arm of the other side. Not unfrequently there remains a difference in the degree of paralysis on the two sides, one leg or arm being more affected than its fellow. In cases where the congestion of the cord is general the arms as well as the legs are affected, the former perhaps as much as the latter; but in the common run of cases, where the congestion is confined chiefly to the lumbar region of the spine, the legs are exclusively or chiefly affected.

No anæsthesia.—Numbness is a symptom of myelitis, but not of spinal congestion. In the latter disorder, indeed, instead of numbness there is occasionally a state of things which may be spoken of as hyperæsthesia: thus, in a case very like the one I have given, which came under my notice in private practice about three years ago, the weight of a single bed-sheet was distressingly heavy to the patient, and long-continued aching of the paralyzed arms and legs was produced by handling them ever so lightly.

Tingling in the tips of the fingers or toes of the paralyzed limbs.—This symptom is almost always present at one time or other, coming and going and staying a longer or shorter time, often, as it would seem, very capriciously. One is glad to get rid of it, for while it remains it is difficult altogether to put aside the fear lest the state of the cord should pass out of spinal congestion simple into the graver disease of myelitis.

No exaggeration of reflex excitability in the paralyzed limbs.—Increased disposition to reflex movement is usually regarded as one of the symptoms in spinal congestion. It is supposed that the greater afflux of blood to the spinal cord must bring with it greater reflex excitability. I believe, however, that this supposition is not at all borne out by the facts. I believe, indeed, that the moderate reflex excitability in the case under consideration is not at all exceptional, and that it is the rule in all cases of spinal congestion for this manifestation of muscular contractility to be, if altered at all, diminished rather than increased.

No paralysis of the bladder or sphincter ani.—In myelitis, paralysis of the bladder or sphincter ani, more or less complete, is a prominent symptom: in spinal congestion, on the contrary, these symptoms are absent, except in those mixed cases where there is reason to believe that some degree of myelitis is also present. In the case which I have given there was not the least want of control over the bladder or bowel from the beginning to the end.

No tenderness on pressure along the spine.—Absence of spinal tenderness I believe to be the invariable rule, not only in spinal congestion, but also in myelitis and spinal meningitis. I believe, indeed, that spinal tenderness is a sign of the presence of that functional disorder of the cord which is usually called spinal irritation, and that it does not accompany the graver diseases of the cord which have been named when they are uncomplicated with spinal irritation. Upon this subject I shall have more to say presently.

Dull aching along the spine increased by warmth.—I have noticed this symptom in three cases of well-marked general spinal congestion which have come under my own observation, and in many cases of partial congestion; and I am disposed to think that this will prove to be one of the points of difference between spinal congestion and spinal irritation. I have also noticed the same symptom in myelitis and spinal meningitis, and therefore I cannot regard it as having any special connection with spinal congestion. In fact, so far as my experience goes, I can say that this symptom is likely to be met with in congestive or inflammatory diseases of the cord, but not in spinal irritation simply; and that in this latter case, the local application of warmth to the spine is more likely to relieve pain than to cause it.

Pains in the back and limbs not increased by movement.—This symtom has some claim to be regarded as constant. The aching would seem to go and come with the congestion; and the fact, for fact it seems to be, that it is not increased by movement, may help to distinguish spinal congestion from spinal meningitis, for in the latter affection movement of the limbs, whether passive or active, is attended with pain in the parts moved and in the back.

No marked impairment of electro-contractility and electro-sensibility in, and no wasting of, the paralyzed muscles.—In myelitis the paralyzed muscles are prone to waste and to lose their electro-contractility and electro-sensibility, and herein, therefore, would seem to be a marked difference between this disorder and spinal congestion; for, so far as I know, the contrary state of things invariably holds good in spinal congestion. In speaking thus, however, it must not be forgotten that all muscles which remain paralyzed eventually lose their irritability and struction; and this equally, whether the paralyzing cause be myelitis, spinal congestion, or other.

No feverishness.—This is no special feature; indeed, fever would seem to have little to do with any affection of the cord, not even excepting meningitis in its most active form.

No bed-sores.—A marked disposition to bed-sores would seem to be the rule in myelitis, but not so in spinal congestion or spinal meningitis. Upon this point, more than upon many others, there is tolerable unanimity of opinion.

Shortness of breath.—Where the spinal congestion is at all general, this state of things may be readily accounted for by the paralytic weakness of muscles concerned in respiration. In the case which serves as my text, the occasional shortness of breath is noticed as not amounting to asthma; and this is a point of some interest, for it may be supposed that the difficulty of breathing would have taken this form—would have had something of a decidedly spasmodic character

—if the congested condition of the cord involved, as it is supposed to do, an exaggeration of reflex excitability.

Proneness to relapse.—Whether this may prove to be a constant feature in spinal congestion remains to be seen. That it is not an uncommon one is to me an indisputable fact.

Spinal congestion varies greatly in its degree, and in the extent of cord implicated. Limited to the lumbar region, and carried to a degree which produces, not paralysis, but weakness more or less approaching to paralysis in the legs, it is common enough; indeed, many women seem to suffer from it before every menstrual period; and between this partial and incomplete form and the general and complete form, of which the case which has been given is an instance, there are all possible grades of transition. It would seem to be most common in women, but it is not peculiar to the female sex or to any age. The onset of the disorder is generally sudden, in relapses as well as in original attacks; and the cases do not at all divide themselves into acute and chronic as do the cases of many other disorders.

2. Post mortem Appearances.—These appearances are very vague and unsatisfactory, at most being simply some engorgement of the veins of the spinal cord and membranes, with some excess of the spinal fluid, both of which phenomena, as will be easily understood, are not very unlikely to escape detection unless the post-mortem examination be conducted with unusual care. With the exception of this engorgement and serous effusion, the only morbid sign which has been noticed (and this by no means constantly) is slight infiltration with blood of the cellular tissue exterior to the dura mater. In all uncomplicated cases, the structure of the cord and of its membranes is in nowise altered.

3. Causes.—As in the case which I have given, the suppression of the catamenia would seem to figure most conspicuously among the causes of spinal congestion, and next to this the cessation of hemorrhage from piles. Beyond this it is difficult to single out any one cause which has a just claim to be considered as at all special: and, for the rest, nothing further need be said except this—that spinal congestion is not unfrequently a consequence of pulmonary or abdominal congestion or inflammation—a consequence, perhaps, which has often more to do in compromising the safety of the patient than the primary disorder itself.

4. Diagnosis.—Paraplegic paralysis is a symptom common to spinal congestion and myelitis, with this difference, that it is less complete in the former affection than in the latter. The paralysis is associated with anæsthesia in myelitis; not so in spinal congestion. The control of the bladder and bowels is lost in myelitis; not so in spinal congestion. The paralyzed muscles are prone to waste and lose their electro-contractility and electro-sensibility in myelitis; not so in spinal congestion. The imperfect paralysis and the absence of anæsthesia would seem, indeed, to connect spinal congestion more closely with spinal meningitis than with myelitis, and so also would the pain in the back

and aching in the limbs; but the pain and aching in spinal congestion cannot well be confounded with the pain which is met with in spinal meningitis, for the pain in this latter affection is produced by movement and accompanied by rigidity, whereas the pain in the former affection is not produced and accompanied in this manner. Hysterical paralysis, so called, agrees with the paralysis depending upon spinal congestion in some respects but not in others. It agrees in that the paralyzed muscles are neither prone to waste nor to lose their electro-contractility; it disagrees in that numbness is a prominent symptom, more prominent even than the paralysis, and that the electro-sensibility of the paralyzed muscles is either annihilated or very much diminished.

5. Prognosis.—Recovery is the rule, no doubt, in cases of spinal congestion, but there is no difficulty in finding cases in which the disease has been fatal, and quickly fatal too. In the partial form, affecting the lumbar portion of the cord only, spinal congestion may come and go quickly without any great damage being done; but in the cases in which the cord is more extensively and more profoundly affected, as in the case which has been cited, recovery may occupy a considerable time. Thus, of the cases recorded by Ollivier, No. 55 remained in hospital nearly five months, No. 56 two months, No. 57 three months, and No. 58, "assez longtemps." Recovery is slow, as it would seem, because time is required for the absorption of the excess of spinal fluid to which the state of spinal engorgement had given rise.

6. Treatment.—What has been said respecting myelitis must be supposed to apply here equally. Indeed, the only special remark which appears to be called for in this place is this—that in cases where, as very generally it happens, the spinal congestion can be referred to suppression of a menstrual or hæmorrhoidal discharge, the primary indication would appear to be the setting up of an equivalent discharge by applying leeches to the os uteri or to the anus.

IV. Tetanus.

Tetanus is unhappily no rare or unfamiliar malady. The name, from τείνω, I stretch, refers to that rigid and cramped condition of the muscles which is the most characteristic symptom, and which, in sober earnest, is suggestive of rigor mortis, not only *in posse* but actually *in esse;* for there are some cases in which, without any interval of relaxation, tetanic rigidity at once passes into cadaveric rigidity. Hydrophobia alone excepted, tetanus is at once the most appalling and the most perilous of all spasmodic diseases.

1. Symptoms.—As an instance of well-marked tetanus, I take the notes of such a case which I happened to see from the beginning to the end about six years ago.

Case.—Patrick M——, a fair, slightly-built, delicate-looking man, unmarried, aged 27, the coachman of a gentleman then under my care. On the 21st of April, 1861, as I was leaving the house of his master, I found him in the hall, and he took the opportunity of saying that he was not well enough to bring round the carriage, and of asking me what he had better do. What he complained of chiefly were a stiff neck and sore throat, with a feeling of weakness and illness. The stiff neck and sore throat made their appearance for the first time this day; the feeling of illness and weakness have been present for the last three days. The mouth cannot be opened so as to allow a fair look at the tongue, and a meal, it appears, has just been left unfinished, not for want of appetite, but simply on account of the difficulty experienced in masticating and swallowing the morsels. There is no feverishness.

P. M—— ascribes his present indisposition to having been out with the carriage several hours in the wet and wind three nights ago, and he says further that he is liable to colds. Before speaking to me, he had taken some opening medicine which a chemist had prescribed and prepared for him, and he thinks that this dose may account for the fact of feeling so ill and weak at the present moment. Some simple treatment was recommended, and I took my leave, not at all divining what was so soon to follow.

April 22.—Receiving information that this poor fellow was not so well, I went round to see him at his lodgings. I found him strangely altered. His teeth were firmly and inseparably clenched, and he looked literally like an old man—so like, that his mother, who lived with him, said that she could have thought his father had come back to life if only his hair had been gray. His voice had also become so low and indistinct as to make it difficult to catch what he said. The medicine given by the chemist yesterday, it appears, has purged him violently several times in the night, and more than once while at stool he has been seized with acute pain in the pit of the stomach, which took away his breath, and made him think he was going to die. It was in the night, while at stool, that the jaws became closed. I wished him to go to the hospital, and he was willing to do so, but his mother would not consent. Eggs beaten up with brandy were ordered to be given repeatedly, and every three hours a draught containing five grains of quinine and half a drachm of Hoffmann's anodyne. I now noticed on one of the fingers, which was tied up in a piece of rag, a small wound, healing and apparently healthy, the result of a tear by a rusty nail about a fortnight ago.

On a second visit, later in the day, I found that repeated attempts had been made in the interval to give the food and medicine, but with very trifling success. There was no great difficulty in getting the food or medicine into the mouth, for almost all the teeth on the right side were gone, but the attempt to swallow brought on spasm in the throat, and on more than one occasion the spasm forced the greater part of what was taken back through the nostrils. And this difficulty was all the more distressing, because a feeling of hunger prompted the patient of his own accord to make frequent attempts to swallow. The chief complaint now was of a dragging pain at the pit of the stomach, piercing through to the back. In answer to a question whether he could sit up in bed, he said, "I think I am too stiff to do so," and then he tried to sit up, and succeeded after making two or three abortive attempts. While sitting up I found that he could scarcely move his head, and that the muscles of the neck and back were very stiff and hard. I had only just noticed these phenomena when the noise caused by the upsetting of a chair brought on a fit of spasm, in which the patient was suddenly thrown backwards upon the bed with considerable force, and left resting upon his head and heels, in a state of complete opisthotonos—a state so complete as to make it possible for me to pass my hand under the loins without touching either the body or the bed. This severe spasm lasted not less than a couple of minutes, and the only muscles which did not seem to be implicated in it were the abdominal, those of the arms and hands, and those of the eyeball. In this spasm the complexion became dusky and livid, and the features altered in a frightful manner, the angles of the mouth being drawn upwards and outwards so as to give the expression known as the *risus sardonicus*, the set teeth being slightly uncovered, the nostrils spread, the eyes staring and prominent, the brow knit, the hair bristling—the complexion and features became changed, that is to say, as they are changed in sudden suffocation. All this while, too, the skin generally was dusky and hot and drenched in perspiration. For some time after this spasm had passed off the patient remained moaning, and unable to speak audibly, and then he said, "That pain will kill me if it comes back." I noticed, also, that there remained after this spasm a state of tetaniform rigidity and contraction, by which no inconsiderable degree of opisthotonos was still kept up. The eggs and brandy and the medicine were ordered to be given by enema.

April 23.—Two attempts were made to administer the enemata ordered over night without success, the irritation of the pipe in each instance bringing on a fit of spasm; indeed, all that it has been possible to give since my last visit have been a few sips of wine and water. There has been no sleep whatever during the night. During the last eighteen hours several fits of spasm like the one described have occurred, and the permanent rigidity and contraction remaining between the fits have increased. The abdominal muscles, which were not at all implicated yesterday, are now as hard and stiff as those of the neck, back, and legs. The pulse is quick (about 140), weak, and somewhat irregular; the breathing is shallow, hurried, and frequently checked by gasps and catches, even when it is not interrupted by the fits of spasm.

No material change has taken place since the morning. On one occasion in the course of the day an egg beaten up with some brandy has been swallowed, but all other attempts to administer food or medicine, whether by the mouth or by the rectum, have been rendered abortive by the fits of spasm to which they gave rise.

April 24.—Again the night has passed without sleep, and to-day the constant tetaniform contraction has become almost universal. In fact, the only muscles which are not obviously affected are those of the hands, and tongue, and eyeball. The fits of spasm, also, are now more frequent and severe, being not more than fifteen or twenty minutes apart, and lasting until death from suffocation seems even more than imminent; they are brought on by the most trivial causes

—an attempt to swallow, a draught of air, the simple straightening of the bedclothes—or they come on without any apparent cause. There is no improvement in the breathing and pulse, but if anything a change for the worse. During the fits the skin is hot, dusky, and drenched in perspiration: in the intervals it has an ominous coolness and clamminess. The mouth is full of viscid frothy saliva, and there is much thirst. While I was present a small quantity of dark urine was passed slowly and with some difficulty, and this appears to be the only time the bladder has acted for at least twenty-four hours. The pupils are large, especially in the paroxysms.

Shortly before I went again at the end of the day, there had been a momentary snatch of sleep, which had been abruptly brought to an end by an attack of opisthotonos, in which the tongue or cheek had been bitten, and now the frothy viscid saliva which filled the mouth to overflowing was deeply crimsoned with blood—a ghastly addition to a countenance already overcharged with horrors. During the last six hours the paroxysms have been less frequent and severe, but the vital powers are evidently fast ebbing away. "I cannot get my breath," was the answer slowly and almost inarticulately given to the question, "Have you much pain?"

Death happened about midnight, an hour after I had taken my leave, after a paroxysm of opisthotonos of no special violence, brought on, as it would seem, by an attempt to wipe away the bloody saliva from the lips. When I left the mind was perfectly clear and collected, and at no time, either before or after, was it otherwise.

For the rest it only remains to add (for the objections made to a post-mortem examination were insuperable) that the countenance appears to have retained after death the aged expression it had before death, and that the corpse when "laid out" was found to have stiffened without losing altogether the opisthotonic attitude. The mother of the patient is my only authority upon these points, for unfortunately it did not occur to me to make inquiries respecting them before the funeral had taken place.

In order to realize the points of resemblance and difference between this case and other cases of the kind, the course I propose to pursue is to take one after the other, as the points demanding attention, these—permanent muscular contraction, beginning by causing trismus, ending by causing opisthotonos, and implicating when at its height almost all the voluntary muscles except those of the hands, the eyeball, and the tongue; pain at the pit of the stomach piercing through to the back; difficulty of swallowing from the occurrence of spasm; fits of painful spasm in the permanently contracted muscles; risus sardonicus, and an aged expression of countenance, apnœa in the fits of spasm, and more or less dyspnœa at other times; profuse perspiration in the fits of spasm, with heat of skin; increased reflex excitability; absence of fever; absence of sleep; absence of numbness or tingling; absence of "head symptoms;" no marked want of control over the bladder and bowels; comparative voicelessness; the mouth clogged with viscid frothy saliva; a bitten tongue or cheek; dilatation of pupils; absence of priapism; presence of a wound; death by apnœa; early if not immediate rigor mortis.

Permanent muscular rigidity, causing, first, trismus, then opisthotonos, and implicating, when at its height, almost all the voluntary muscles except those of the hands, the eyeball, and the tongue.—Muscular rigidity, continuing without any marked relaxation from the time of its first appearance, is the most characteristic symptom of tetanus. It would seem to be the rule for this state of stiffness to begin in the muscles of the jaws, causing trismus, and to extend from thence as a centre, first to the muscles of the face and neck, then to those of the back, causing opisthotonos, then to those of the lower extremities, and, lastly, to those of the upper extremities, the progress in both extremities being from above downwards; but there are exceptions to this rule, for a few cases are on record in which the muscles of the neck have been affected before those of the jaws, and others, also only few in number, where the muscles near a wound, as of a stump after amputation, have been the first to become rigid. Even in the most extreme cases, the hands and the tongue are found to remain limber, and it is but very rarely, except perhaps in children with "head symptoms" in addition to the ordinary phenomena of tetanus, that a squint or a fixed stare shows that the deep muscles of the orbit are affected. Fits of spasm, of which more will have to be said presently, may seize upon the tongue, as they do very frequently upon the muscles of the throat in attempts to swallow, but there is no proof that either the tongue or the muscles of the throat are ever in a state of permanent contraction. Neither is there any certain proof that the heart or other involuntary muscles are in any degree permanently contracted. The affected muscles are very hard, curiously so, feeling very much as they do in rigor mortis, and they are not unfrequently somewhat tender when pressed or squeezed. In the great majority of cases, without question, the first effect of tetanic rigidity is to close the jaws and cause trismus, and the next to bend the body backwards and produce opisthotonos. Opisthotonos, indeed, is almost as characteristic and constant a result as trismus. Now and then, it is true, instead of the body being bent backwards it may be bent forwards (emprosthotonos), or sideways (pleurosthotonos), but these cases are quite exceptional, and *opisthotonos* may in reality be looked upon as the position which the body always takes or tends to take in tetanus.

Pain at the pit of the stomach piercing through to the back.—This is reckoned by the late Dr. Chambers as the pathognomonic symptom of tetanus, and in fact it is scarcely ever absent, not even at the very beginning. This pain is especially severe in the fits of spasm, and then it is often agonizing, but it is present also, if not in a severe, at least in a mitigated form, in the intervals between these fits, scarcely ever ceasing altogether, even for a moment, when once it has made its appearance. It depends, there is little reason to doubt, upon the diaphragm being implicated in the tetanic condition. Once it was looked upon as a certain death-warrant, but this opinion, as Mr. Curling has shown, is untenable.

Difficulty of swallowing from the occurrence of spasm.—This spasm, which is provoked by the attempt to swallow, may be in the pharynx or gullet, or in the cardiac aperture of the diaphragm, one or all, making swallowing impossible, and often leading to the violent ejection of fluids through the nose or from the mouth. The distress consequent upon it may sometimes cause a horror of liquids not unlike that which exists in hydrophobia, and it always constitutes a grave difficulty, for it not only incapacitates the patient from feeding in the usual way, but it prevents him from being fed by means of the stomach-pump.

Fits of painful spasm in the permanently contracted muscles.—These fits become more frequent as well as more violent and painful as the disease progresses, recurring when at the worst every ten or fifteen minutes, and lasting from one to two and a half minutes. So violent has been the muscular contraction in some of these fits, that the teeth and thigh bones have been broken, and great muscles like the psoas and recti femorales torn across. These fits of spasm are almost invariably very painful, the pain being that of cramp, but now and then the pain has been absent: thus, Sir Gilbert Blane mentions, on the authority of a surgeon in the navy, a case of severe tetanus, fatal in four days, in which the fits of spasm only gave rise to a sort of pleasurable tingling; and Mr. Curling instances an analogous case. Most generally the pain in the fit of spasm is felt chiefly at the pit of the stomach, and very often the pain in this region may be so agonizing and stifling as to make the patient insensible to pain elsewhere. Sometimes the pain in the neighbourhood of a wound, as in the stump after amputation, is that which is most complained of.

Risus sardonicus and an aged expression of countenance.—The sneering expression, caused by the angles of the mouth being drawn backwards and upwards, and known as the risus sardonicus, in association with spread nostrils, staring and prominent eyes, knitting of the brows, and bristling of the hair, is so often present as to be properly reckoned as pathognomonic of tetanus. In the fits of spasm the lips are often drawn apart so as to expose the set teeth, but sometimes they are kept tightly pressed together by the spasmodic action of the orbicularis oris. The aged expression which was present in the case I have given, is exceptional, but it has been met with in other cases. Thus, Mr. Curling refers to a case of idiopathic tetanus, related by Dr. W. Farr, in which the patient, who was only twenty six years of age, looked at least sixty; and he says further that he himself has "observed the same circumstance in an equally remarkable degree."

Dyspnœa with fits of comparative apnœa.—When tetanus is fully developed, an apprehension of suffocation is often present even in the intervals between the fits of spasm, and in these fits the suffused eyes, the livid countenance, and the agonizing struggle for breath show plainly enough that this is in no sense a groundless fear. How this difficulty is brought about is not easy to say, and probably the way is not always the same. Sometimes spasmodic closure of the glottis would seem to be a prominent cause; sometimes the thorax is, as it were, held in a vice by the spasm of all its muscles generally; must commonly perhaps these two causes act together. From my own small experience I should be disposed to attach less importance to the last cause than to the first, and I question whether much relief would be obtained in any case by carrying out Marshall Hall's suggestion of opening the windpipe in cases of tetanus.

Increased reflex excitability.—In P. M——, as the disease advanced, the fits of spasm were brought on by the most trivial causes—a draught of air, a sudden noise, an attempt to swallow, an attempt to administer an injection, the arrangement of the bed-clothes, the lightest touch even—and hence it may be inferred that increased reflex excitability was an element in this case. Nor is this case at all exceptional in this respect. As the disease advances, in fact, the controlling influence of the nervous system is removed, and this is all, for what are counted as signs of increased reflex excitability are in reality no more than signs of nervous exhaustion, such as manifest themselves whenever the vital powers are sufficiently lowered by loss of blood, or in any other way.

Profuse perspiration with heat of skin, in the fits of spasm especially.—In the fits of spasm the skin becomes hot and literally drenched in perspiration, and in a lesser degree this state of things continues in the intervals between these fits, except towards the end, when the chill damps of death show themselves. Sometimes the perspiration has a peculiar pungent smell, sometimes it is accompanied by a miliary eruption. The degree of heat attained is often considerable—in some cases as high even as 105° and 110.75° Fahr.

Absence of fever. —The heat of skin which has just been mentioned may at first sight appear to countenance the notion that fever is a part of tetanus, but it is evident on further inquiry that this phenomenon is mostly connected, not with fever, but with dyspnœa, the skin receiving more blood, and in that way acquiring increased temperature in obedience to that law of compensation by which to a certain degree the skin is obliged to do more respiratory work when the lungs do less than they ought to do. The thirst, also, which is often so much complained of when the disease is at its height, is owing less to fever than to the inability to drink the fluids necessary to the wants of the system, for the patient is often hungry at the very time he is tortured with thirst—a plain proof that he has no fever in the true sense of the word. Nor does the pulse support the idea of fever. On the contrary, the pulse points to exhaustion rather than to fever, being scarcely ever otherwise than quick and weak; and if in the fits of spasm it puts on a semblance of power, it is plain, from the state of suffocation obtaining at the time, that this change is simply owing, as I have elsewhere explained, to the difficult passage of imperfectly aërated blood through the capillaries. In fact, in the great majority of cases of tetanus there is no fever, and in the exceptional cases where some fever is present, its history shows that it is a consequence rather than a cause of the spasm, seeing that it is absent at first, and present only when the system is becoming exhausted by starvation, sleeplessness, and spasm.

Absence of sleep.—In the acute cases sleep, as a rule, is banished altogether, and even in the subacute cases this blessing is only realized in unrefreshing broken snatches. Want of sleep, indeed, is one of the not least distressing features of this disease. "The muscles," says Mr. Curling, "are observed to be relaxed during sleep, a striking example of which occurred to Mr. Mayo in a boy who recovered from the disease. On visiting his patient before the symptoms were subdued, Mr. Mayo found him asleep, and remarked that he lay perfectly relaxed. The abdominal muscles were soft and yielding, and had not the least tension. The boy was awakened, and at the instant the full tension of the muscles returned. Not being further disturbed, he fell asleep in a few minutes, when the muscles again became relaxed, and again, on his being awakened, resumed the state of spasm. I have on several occasions witnessed the same phenomena." Except the biting of the tongue, on waking from a brief nap, be a reason for believing that the muscles of the jaws had been relaxed during sleep, so as to allow the tongue to get between the teeth, there was no proof that the muscles were relaxed during sleep in the case I have given; but in other cases I have had proof sufficient of this relaxation.

Absence of numbness and tingling.—Of this there can be no doubt—that numbness and tingling form no part of the history of tetanus.

Absence of "head symptoms."—The mind is clear from the beginning to the end of the disease almost invariably, and not unfrequently it is a matter for wonder how well the patient bears up under his atrocious sufferings—a marked difference this between tetanus and hydrophobia. And in the few instances in which delirium or coma has made its appearance a short time before death, it is not improbable, as more than one writer has observed, that this derangement is often more the result of the remedies employed than of the disease.

No marked want of control over the bladder or bowel.—In tetanus there is, as a rule, none of the difficulty with the bladder which is almost invariably met with in acute spinal meningitis. The bladder may act seldom, but it is not incapable of acting. Constipation is a common but not a constant symptom, and when it is present it may be a question whether, like the "head-symptoms," it is not as much due to the medicines used as to the disease. Now and then, however, there may be great difficulty in voiding the contents of the bladder and bowels, and in some of these cases the resistance to the introduction of a catheter or enema-pipe has shown that a part of this difficulty is owing to spasm of the compressor urethræ or sphincter ani.

Comparative voicelessness.—This phenomenon is readily accounted for as a result of the spasmodic interference with the action of the chest and of the tight shutting of the jaws. Indeed, it could not well be otherwise in the fully developed disease.

The mouth clogged with viscid frothy saliva.—This is a common if not a constant symptom, though not so marked in degree as in hydrophobia, and there is no difficulty in accounting for it in either case, for the inability to drink and swallow will explain at one and the same time why the saliva is viscid and why it accumulates in the mouth.

A bitten tongue or cheek.—This accident is of rare occurrence, and its rarity may be taken as an incidental proof of sleeplessness as a symptom of tetanus, for it is to be supposed that the opening of the jaws, from the relaxation of their muscles during sleep, would allow the tongue or cheek to get between the teeth—to get into that position in which the spasm which attends the moment of waking would be sure to crush them.

Dilatation of pupil.—This condition was always present in the case which serves as my text, especially in the fits of spasm, and this has been the rule in three cases of tetanus in which I have examined the pupil. Mr. Curling, on the contrary, found the pupil contracted in the majority of his cases.

Absence of priapism.—Mr. Morgan states that priapism occurs occasionally; but this observation is not confirmed by other writers on the subject. I have never seen it, and I am very much disposed to think that the case or cases in which Mr. Morgan saw it were cases, not of tetanus, but of acute spinal meningitis, in which disorder priapism is an occasional symptom.

Presence of a wound.—The great majority of cases of acute tetanus appear to be in some way dependent upon a wound or injury of one kind or another in one place or another. I shall have occasion to refer to this relationship elsewhere: and at present I would only notice, in passing, the presence of a wound which to all appearance presented no indications of an inflammatory or otherwise unhealthy character.

Death by apnœa.—Apnœa is one way, and perhaps the common way, in which death is brought about in tetanus. Not unfrequently, however, the patient sinks from asthenia, having been to a great degree free from fits of suffocative spasm for some time before death. Spasm of the heart has also been mentioned as a method of dying in tetanus, and the heart has not unfrequently been found to be curiously hard and contracted after death; but an examination of the facts tends very much to discountenance this idea, and to show that death is either by apnœa or asthenia, singly or together.

The immediate occurrence of rigor mortis.—Sommer and others have noticed that rigor mortis may occur without any appreciable interval of muscular relaxation after death from convulsions, and Dr. Brown-Séquard has confirmed this observation and given a definiteness to it which it had not before. He has indeed done more than this, for he has not only confirmed the fact that rigor mortis may occur without any appreciable interval of muscular relaxation, but he has established the law that rigor mortis is long in coming on and long in passing off where death was not preceded by any long-continued violent action of the muscles, and that it is quick in coming on and quick in passing off in direct proportion to the amount of long-continued violent action which preceded death. In many animals killed by strychnine, for example, in which death was brought about, not by one violent spasm, but by many, he has found rigor mortis set up before the heart had ceased to beat. Nay, he even refers to the case of a man under his observation in which rigor mortis occurred before the heart had ceased to beat. I have never witnessed this phenomenon either in animals or in man; but I have more than once failed to find any line of separation between tetanic stiffness and cadaveric rigidity in animals killed by strychnine, or by the shocks of a Ruhmkorff coil; and I am therefore quite prepared to understand that in P. M——'s case, where there were many convulsions before death, rigor mortis may have occurred without any appreciable interval of muscular relaxation, and in this way fixed in the corpse the aged expression of the countenance, and the opisthotonic attitude.

Two distinct varieties of tetanus are usually recognized, and properly so—the *traumatic*, in which a hurt of some kind or other is believed to be the primary cause; and the *idiopathic*, in which the only obvious cause would seem to be exposure to cold and damp. In each variety the symptoms are much the same, any difference of moment being only one of degree. In the acute form, the spasms come on suddenly, occur frequently, and grow in violence with each recurrence; in the less acute forms the spasms are more slowly developed in the first instance, the paroxysms are comparatively far between, and they do not recur with increasimg rapidity and violence. The traumatic, as a rule, is more acute than the idiopathic variety. Trismus nascentium is considered by many as a distinct variety of tetanus, but this appears to be a distinction without a real difference. It is tetanus in newly-born infants—traumatic, because the wound of the navel seems to have a good deal to do with its production, and at the same time idiopathic, for it is certain that cold and damp, and foul air, and other general causes also figure conspicuously as sources. It is, indeed to this form of tetanus that a remark of Sir Thomas Watson applies especially, which is applicable to all forms, namely, this, that "although tetanus may be excited by a wound, independently from exposure to cold, or by cold, without any bodily injury, there is good reason for thinking that, in many instances, one of these causes alone would fail to produce it, while both together call it forth."

2. POST-MORTEM APPEARANCES.—There are no morbid changes in the nervous system peculiar to tetanus. "Serous effusion with increased vascularity," says Mr. Curling, "is generally observed in the membranes investing the medulla spinalis, and also a turgid state of the bloodvessels about the origin of the nerves," and the same changes may also be met with in the cranium, but in a less degree and less frequently. It is also a fact of considerable moment in relation to this point, that Magendie, Ollivier, and Orfila failed to detect any perceptible lesion in the spinal cords of animals dying from the tetanus produced by strychnia. Out of seventy fatal cases collected by Mr. Curling there were only two in which changes in the nervous system unequivocally the result of inflammatory action were discovered after death, and these two were cases where there had been a blow or wound to the back, where the symptoms had plainly to do with the inflammation of the cord or its membranes rather than with tetanus, and where the signs of inflammation found after death may, to say the least, be referred to the injury quite as easily as to the tetanus. Mr. Curling also points out, as a fact not to be overlooked, that the turgid state of the vessels of the pia mater, together with the effusion of serum which is met

with in the spinal cord and brain after death from tetanus, is also met in those persons who have been poisoned by opium, hydrocyanic acid, and other powerful agents often employed in the treatment of tetanus, as well as after death from delirium tremens, hydrophobia, epilepsy, and other diseases; and, as bearing upon these exceptional cases, in which unequivocal signs of inflammation in the cord or brain have been met with after death from tetanus, he says, "Whether inflammation be the result of injury or arises spontaneously, it is worthy of notice that the spasms, though continued and severe, do not occur in such violent paroxysms as in traumatic tetanus." Neither can the preternaturally injected state of the minute vessels supplying the sympathetic ganglia, especially the cervical and semilunar, met with by Mr. Swan and others in some cases of tetanus, be looked upon as at all constant phenomena after death from tetanus.

Traces of inflammation in the wound, especially in the injured nerves, may be met with after death from tetanus, and more frequently than in the spinal cord or other great nervous centres; but these again, instead of being constant, are not even common appearances. In the great majority of cases, indeed, the wound, if there be one, is perfectly healthy to all appearance and healing. Neither are there any other post-mortem facts which can be looked upon as essential to tetanus, for those which remain to be mentioned, as ruptured muscles, broken or dislocated bones, engorged lungs, injection and contraction of the pharynx and palate, worms in the alimentary canal, and others, are plainly accidental and exceptional.

3. CAUSES.—The two great causes of tetanus are, as has been mentioned already, cold and damp, and bodily injury of some sort. Exposure to cold and damp tells most in this manner when acting upon a body previously relaxed by heat and perspiring, and this is all that can be said, except that this exposure is more likely to issue in tetanus in a foul atmosphere than in a fresh one. As regards the hurt which may give rise to tetanus, it is difficult to know what to say. In the Peninsular war, as Sir James McGregor states, tetanus supervened on every description and in every stage of the wounds, from the slightest to the most formidable, in the healthy and sloughing, the incised and lacerated, the most simple and the most complicated; and this statement expresses the opinion of all surgeons, army-surgeons and others. Indeed, all that can be said is that punctured wounds seem to be more likely to issue in tetanus than incised, and wounds in the extremities more than wounds in the head, breast, and neck. And certainly an inflammatory condition of the wound cannot be regarded as essential. In a great number of cases, in the majority perhaps, the primary wound was completely healed and almost forgotten when the symptoms of tetanus made their appearance; and Dr. Rush, who had extensive opportunities for observation in the military hospitals of the United States, and who was unquestionably a most competent observer, remarks that there was invariably an absence of inflammation in the wounds causing the disease. John Hunter also says: "The wounds producing tetanus are either considerable or

slight. . . . When I have seen it from the first, it was after the inflammatory stage, and when good suppuration was come on; in some cases when it had nearly healed, and the patient was considered healthy. Some have had locked jaw after the healing was completed. In such I have supposed the inflammation to be the predisponent cause, rendering the nervous system irritable as soon as it was removed. When tetanus comes on in horses, as after docking, it is after the wound has suppurated and begun to heal." There is, indeed, abundant evidence to show that an inflammatory condition of the wound is not necessary to the production of tetanus, and some evidence even which is calculated to lead to a contrary conclusion, by showing that where an inflammatory condition of the wound has been present, this condition has passed off before the tetanic symptoms made their appearance—the inflammation, to repeat the words of John Hunter just used, "rendering the nervous system irritable *as soon as it was removed*," not rendering it irritable as long as it was present. The interval between the hurt and the development of the tetanic symptoms varies considerably. In eighty-one of the cases collected by Mr. Curling, the symptoms made their appearance between the fourth and fourteenth days, both inclusive, and in nineteen on the tenth day. Four cases are also given in which the symptoms came on more speedily, one (somewhat doubtful) almost instantaneously, another in one hour, a third in two hours, and the fourth in eleven hours, and, at the other extreme, one in which they were deferred as late as the tenth week. In traumatic tetanus the sooner the symptoms show themselves the more acute and dangerous is the malady. In idiopathic tetanus the symptoms, as a rule, commence sooner than in traumatic tetanus, often in a few hours; but the idiopathic notwithstanding, is generally of a more chronic kind than the traumatic, and far less dangerous.

Tetanus is not a malady peculiar to any country, or climate, or people, but it is more common in hot countries than in cold. It would appear, also, that negroes are more likely to be attacked than whites. Great atmospheric changes, especially from heat to cold and damp, as to a cold and dewy night after a sultry day, are evidently most favorable to the development of tetanus, and so in a less degree are foul air, despondency, terror, physical exhaustion.. It must be confessed, however, that cases of idiopathic tetanus, as compared with those which are traumatic, or partly idiopathic and partly traumatic, are, to say the least, extremely rare in this country.

4. Diagnosis.—The differences between tetanus and acute spinal meningitis are sufficiently marked to prevent any confusion as to diagnosis if only a moderate degree of attention be paid to the subject. In tetanus the jaw is firmly set from the first, and, in addition to the fits of spasm, there is permanent muscular rigidity between the fits; in spinal meningitis, if the jaw be set at all, it is rather at the close of the disease, and then only in an inconsiderable degree, and spasms or muscular rigidity are neither constant nor conspicuous phenomena. In spinal meningitis, indeed, it is plain that the muscular rigidity and

seeming spasms are in great measure voluntary or semi-voluntary acts to prevent the pain in the back and limbs which is produced by movement, and that the muscles are relaxed almost as long as the patient can keep perfectly still. In a word, the true involuntary fits of spasm and the permanent muscular rigidity which are constant and characteristic phenomena in tetanus, are not present in acute spinal meningitis.

Nor can hydrophobia be very well confounded with tetanus. In tetanus the features are drawn into the risus sardonicus, the eyes are natural, and the whole countenance is expressive of pain and suffering—nothing more; in hydrophobia there is an impress of excitement and distress and horror and unrest upon the features which has no counterpart in the tetanic countenance. In tetanus the body is for the most part rigidly fixed in one position by tonic spasm; in hydrophobia the spasmodic movements are clonic, and the body is in a state of perpetual unrest until the stage of final exhaustion. In hydrophobia, noisy attempts are continually made to spit and hawk away the viscid phlegm which fills the mouth and throat to overflowing—the noises being sometimes not altogether unlike the bark of a dog—and any effort to relieve the tormenting thirst, or even the bare thought of such an effort, brings on the fit of fear and convulsive agitation which has given rise to the name hydrophobia: in tetanus there are no symptoms which can be considered as strictly comparable to these. In tetanus, finally, the mind is clear to the last, whereas in hydrophobia there is almost from the first a peculiar and often very wild delirium.

The tetanic symptoms produced by strychnia and some other poisons may be more easily confounded with traumatic tetanus, but even here it is possible, with care, to make a correct diagnosis. It is possible, as Dr. Christison pointed out, for strychnia to be given in repeated doses so regulated as to produce a train of symptoms scarcely if at all distinguishable from traumatic tetanus; but not so if, as is usually the case, an amount sufficient to produce death be given in one dose. In this latter case, indeed, the differences of the symptoms are sufficiently marked. In the toxic tetanus the symptoms run a rapidly fatal course, death happening in a quarter of an hour, half an hour, and usually within the hour: in traumatic tetanus, with very few exceptions, life when briefest is prolonged for two or three days. In the toxic tetanus the arms are stretched stiffly out, the hands clenched, and the legs separated widely from each other and rigidly extended: in traumatic tetanus the hands are usually free from spasm, and the arms nearly so, and even the legs are scarcely ever affected to the degree which is seen in toxic tetanus. In the tetanus caused by strychnia, Mr. Poland says, "The patient can open his mouth to swallow; there is no locked jaw:" in traumatic tetanus, locked jaw is the first and most constant manifestation of the spasm.

The jaw may be locked for a long time, and various muscles in other parts may be affected with continuous spasm in cases in which hysteria is supposed to figure largely as a cause—cases in which there is the condition called spinal irritation, about which I have to treat in the next article: but these cases, as will appear in due time, even when most like, are in reality so unlike tetanus as scarcely to deserve even this passing mention.

5. PROGNOSIS.—In the cases "in which the access is slow, the spasms by no means violent, the paroxysms slight and recurring at long intervals, and where the patient can obtain sleep, whether traumatic or not, we may generally anticipate a favourable result;" and again, "the longer the interval before the appearance of the symptoms, the more chronic is the disease, and the greater the probability of recovery." So speaks Mr. Curling of the chronic cases of tetanus in contradistinction to the acute; and in illustration of the probability of recovery, he adds: "In thirteen cases, symptoms of tetanus occurred about three weeks after the wound, and four only were fatal; and of seven cases in which they did not make their appearance till after a month, only two ended fatally." In the cases, on the other hand, in which the spasms supervene rapidly upon the injury, and recur with increasing violence at decreasing intervals, and in which sleep is banished, a vast majority die—die, as Hippocrates noticed ages ago, within four days. Death may happen in a fit of suffocation in which sometimes there is obviously spasm of the glottis, but more frequently it would seem to be brought about by asthenia after a fit of spasm. The time occupied in recovery varies greatly—one, two, three, four, five, six, seven, eight weeks, or even longer. A certain degree of weakness and stiffness may also remain in the muscles long after recovery. In one case rigidity of the muscles of the jaw remained for six months; in another it returned whenever the patient caught cold up to nine months; and in a third, at the end of three years, it is stated that the "features retained the indelible impression of the disease." These cases are given by Mr. Curling.

6. TREATMENT.—After passing in review the principal remedies that have been tried in tetanus—opium, bloodletting, the cold bath and cold affusion, ice to the spine, the warm bath, bark, wine and spirits, mercury, purgatives, foxglove, tobacco, musk, prussic acid, carbonate of iron, oil of turpentine, strychnia, woorali, ether and chloroform inhalations, amputation, division of nerves, tourniquets—Sir Thomas Watson says: "In all cases, there being no special indication to the contrary, I should be more disposed to administer wine in large quantities, and nutriment, than any particular drug;" and this statement, I take it, expresses a very general feeling in this country. For my own part, I should certainly be more disposed to trust to alcohol than to any drug; but, in saying this, I do not say that I should place no confidence in drugs. I should certainly place no confidence in any sedative or narcotic given by the stomach in sedative or narcotic doses; but, on empirical as well as on theoretical grounds, I should say that opium can scarcely be dispensed with, and that chloroform or ether inhalations will be of infinite service in relieving pain and spasm, and that too without compromising the chances of recovery, if care be taken to pour in wine and to supply nourishment at the same time so as to prevent the patient from waking up almost immediately after the inhalation.

If the rationale of spasm be that which is hinted at in the preliminary remarks, the great indication of treatment must be, not to depress the circulation, but to rouse it into greater activity; and one reason why the treatment of tetanus has been so eminently unsatisfactory may be that this indication has not been fully realized and carried out. In tetanus much wine may be given without producing anything like intoxication, or without relaxing the spasms in any degree. The system in this disease is altogether insensible to the action of wine in ordinary doses. As to this there can be no doubt. Whether a different result would have been arrived at if alcohol had been given more boldly, ardent spirits in place of wine, ardent spirits undiluted rather than diluted, is yet an open question, but I am disposed to think that the spasms might have been conquered without compromising the safety of the patient if this had been done. There are now not a few cases on record which show that the bite of a rattlesnake or cobra or other deadly serpent may be prevented from killing by at once giving ardent spirits in sufficient quantity, and I am disposed to think that these facts have an important bearing upon the treatment of tetanus. There are, undoubtedly, great differences between the condition in tetanus and the condition in these poisoned bites, but there are also certain resemblances which must not be lost sight of. There is the same insensibility to the action of alcohol in ordinary doses; there is an exhaustion to be counteracted, which is more rapidly fatal in the poisoned bite than in tetanus, but which in acute tetanus is sufficiently rapid to create the gravest fears, and to justify the most heroic measures; there may be a poison at work in both cases as well as a wound, a poison introduced into the wound in one case, a poison generated in the wound in the other case. There are resemblances between the two cases, indeed, which, though not very close, may be close enough to justify the hope that a practice which has been found to answer in the bite of a poisonous serpent may also be found to answer in acute tetanus.

In speaking thus, it is not intended to imply that ardent spirits are the only way of fulfilling what has been said to be the primary indication of treatment in tetanus. Eau de luce has been found to be of great service in the bites of serpents, and it might be of service in tetanus. Ether, also, might be of use, or turpentine, or camphor, or ammonia. But to my mind these and other medicines of a like nature are more likely to disorder the stomach and system generally, and in other respects are less manageable and less certain in their action than ardent spirits, and for these reasons without any just claims to precedence in order of merit.

As regards local measures it is less difficult to arrive at a conclusion. In many cases, no doubt, there is an eccentric irritation, starting from the wound or some other point, and much good would be done if this could be removed. It is probable, also, that this end might be gained in more ways than one, and that one very direct way is by the subcutaneous injection of various substances—morphia, atropine, woorali, conia (which seems to be strictly analogous in its action to woorali), calabar bean, &c. The results of these injections in causing the relaxation of spasm in connection with the minor forms of spinal irritation are very encouraging. One thing, however, ought to be borne in mind, and that is, that these injections should be used so as not to produce a general depressing or paralyzing effect upon the nervous system. All that ought to be aimed at is to obviate local irritation merely; and, to my mind, to go beyond this point is both wrong in principle and dangerous in practice.

For the rest, it is, of course, desirable that the patient should be carefully guarded from cold, and from anything which would excite or disturb him, as too much light or noise, or too meddlesome nursing. In a word, quiet and warmth are not only desirable: they are indispensable.

V. IRRITATION.

The first important work on the disorder now generally known as *spinal irritation* was published by Mr. Teale, of Leeds, nearly forty years ago;[1] the next by the brothers Dr. and Mr. Griffin, of Limerick, about fifteen years later.[2] To Mr. Teale, indeed, belongs the credit of being the first to direct attention to this disorder, for, in reality, his claim either to priority or originality is scarcely, if at all, invalidated by the short communications which were made previously to medical periodical literature by Mr. Player, of Malmsbury,[3] by Dr. Brown, of Glasgow,[4] by Dr. Darwell, of Birmingham,[5] and still less so by anything written about the commencement of the century by Franks, Nicod, Ludwig, and others. It would also seem to be difficult to find any work of more recent date which deserves to be mentioned as at all equal in merit and importance to that of the brothers Griffin. The name "spinal irritation" was first proposed by Dr. Brown, of Glasgow.

1. SYMPTOMS.—The symptoms of spinal irritation at first sight appear to be as vague and various as those of hysteria. They are in reality so far hysterical as to be not readily distinguishable. When further examined, however, one symptom stands out prominently, with which the others are obviously connected in a peculiar manner; namely, spinal tenderness, and the upshot of the whole matter appears to be that spinal irritation is a definite malady which must not be confounded with hysteria or with any other disorder. The case I take as a text is as follows:—

Case.—An unmarried lady, aged twenty-three, who consulted me in the early part of 1863 for pains in the head and face, loss of appetite, nausea, flatulence, palpitation, breathlessness, "sinking feelings," weakness, and low spirits. The pain which was the chief suffering complained of, was sharp and neuralgic in its character, and varying in its seat, being sometimes in one part of the head or face, sometimes in another, and generally on the left side only. In the head it was often limited to a spot which might be covered with the tip of the finger, as in true clavus hystericus. Headache in one form or another was brought on or exaggerated by any effort, physical or mental: it was usually relieved by lying down and keeping perfectly still; it was scarcely ever absent except when face-ache had its turn; and sometimes it was so continuous and oppressive as to necessitate remaining in bed for days together. Nausea and sickness were its frequent accompaniment, and vomiting and great prostration were its common termination. In the cervical region of the spine there were considerable tenderness and a disagreeable feeling of weight, and pressure there brought on or increased the headache—the pain shooting from the occiput forwards—and caused a feeling of great nausea and oppression at the præcordia. The feet were always cold; "chills and flushes" were of frequent occurrence, and so were yawning, sighing, and stretching of the arms. Sleep was often made hideous by nightmare; fits of lowness of spirits and crying, attended by a sense of choking, as from a ball or knot in the throat, and followed by plentiful gushes of pale, limpid urine, were brought on by the most trivial causes; and the manner and appearance were altogether those of an eminently nervous or hysterical person. Menstruation was regular, neither excessive nor deficient, and it could not be said that the sufferings were either more or less at this time. The bowels also acted properly, and (but for the disposition to pass large quantities of pale urine, which has been already mentioned) so did the kidneys and bladder.

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[1] A Treatise on Neuralgic Diseases dependent upon Irritation of the Spinal Marrow and Ganglia of the Sympathetic Nerve. By T. P. Teale. 8vo. London: Highley, 1829.

[2] Observations on the Functional Affections of the Spinal Cord and Ganglionic System of Nerves, in which their Identity with Sympathetic, Nervous, and Irritative Diseases is illustrated. By William Griffin, M.D. and David Griffin. 8vo. London: Burgess and Hill. 1844.

[3] Quarterly Journal of Science, January, 1822.

[4] Glasgow Medical Journal, May, 1828.

[5] Midland Medical and Surgical Reporter, May, 1829.

These symptoms, it appears, had their starting-point about twelve years ago in the shock and grief caused by witnessing the death of a brother, her last remaining near relative, in an epileptic fit, and ever since this time they have continued very much as they now are, with but little intermission. Before this time the personal history of the patient was tolerably good, but not so her family history; for, in addition to the brother whose death in epilepsy has just been mentioned, it appears that her father died years before of phthisis, and that her mother is now in a lunatic asylum.

Under the use of a more liberal diet, with ammonia and calumba, and with occasional blisters to the nape of the neck, health was reestablished in little more than a month, notwithstanding the fact that several days at the commencement were wasted in overcoming a dislike to take the wine and medicine necessary—in converting, in fact, the patient from a firm belief in teetotalism and homœopathy.

Towards the close of the same year, 1863, this young lady again returned to me, looking very worn and thin, with all her old symptoms in force, and with cough and difficulty of breathing in addition. The cough was very violent, barking, unattended with expectoration, and often carried on until it ended in retching and vomiting. The difficulty of breathing was chiefly at night: usually it did not amount to more than what might be met by a voluntary effort at inspiration;

now and then it seemed to deserve the name of asthma; almost invariably it was accompanied, not by a feeling of a ball or knot in the throat, but by a sharp pain in the left hypochondrium, or else by severe aching in the left shoulder and down the left arm. Percussion and auscultation failed to bring to light any signs of disease in the heart or lungs, but pressure along the spine revealed tenderness in the cervical and upper dorsal regions, in the latter especially, and at the same time brought on cough, deep inspirations, pain and throbbing at the epigastrium, and a feeling of great faintness and breathlessness.

On this occasion a very fair state of health was soon re-established by the plan of treatment which proved successful in the first instance.

At the beginning of 1865, this lady, then married, again required my services. For three weeks before my seeing her she had been in bed, with her thighs drawn up tightly against her abdomen, and with her heels buried in her nates. This contraction was unremitting during the waking state, and only partially remitting during sleep: it was unattended by pain; and it could be partially overcome, for a time, without causing much pain in the contracted muscles, by slow and steady extension. The headache and face-ache had gone months before, and so had the pain in the epigastrium and in the left shoulder and arm: the cough and difficulty of breathing and palpitation were of very unfrequent occurrence: the appetite and digestion and the action of the bowels were tolerably natural; and what was complained of now were colicky pains in the lower part of the abdomen, pains often very severe and sickening about the loins and hips, and in the region of the left ovary, with constant calls to pass water, and much pain in the urethra in attending to these calls. The spine was now tender, not as before, in the cervical and dorsal region, but low down in the lumbar region, and pressure on the tender part brought on colicky pains in the lower part of the abdomen, and a cutting pain in the urethra, with an almost irresistible impulse to pass water then and there. Pressure in the cervical and dorsal regions of the spine gave rise, not to the marked symptoms produced in this way in the two previous illnesses, but simply to a disagreeable thrill all over the body. There was no numbness or tingling in the legs or elsewhere, and no hyperæsthesia, except perhaps to a very trifling degree over the left ovary. Tickling the soles of the feet gave rise to painful spasmodic shocks in the legs, to a disagreeable thrill passing up the body as high as the throat, and to the involuntary escape of a small quantity of urine. The condition as to general health was tolerably good—much better than during the two previous illnesses; and, in fact, the only sign of disorder, in addition to those which have been indicated (and this can scarcely be reckoned as such), was the absence of menstruation since the birth of a child about three months ago.

Somewhat more than twelve months ago, after having been quite well for the year previously, this patient married and became pregnant. In the early months of pregnancy she had much headache, depression, weakness, and sickness; but after a while these symptoms passed off, and everything went on smoothly and satisfactorily until two months after confinement, when her baby died suddenly. And then began her present troubles. The fretting about her baby brought back the old headaches, the headaches produced great sleeplessness and irritability of the stomach, and then came on a state of uncontrollable fidgetiness which kept her incessantly moving about until her legs, one leg especially, failed altogether, and obliged her to take to her bed. The very next morning her legs had become contracted, and she herself is convinced that this change for the worse, as she regards it, was brought about by the pain and loss of blood produced by introducing a large speculum and by applying leeches to the os uteri on the previous evening.

The treatment on this occasion consisted chiefly in a liberal allowance of food and wine, in repeated blisterings to the lumbar region of the spine, and in the administration of bromide of potassium and ammonia; the result was the cessation of the contractions in about three weeks, and the complete re-establishment of health in about two months and a half.

In commenting upon this case with the view of separating the general phenomena of spinal irritation from the particular, I take the following as the points which most deserve to be attended to, namely, these:—spinal tenderness, neuralgia, spasmodic cough and difficulty of breathing, palpitation and vascular throbbings, nausea, vomiting, and eructations, and irritability of the bladder, all in connection with spinal tenderness; the connection of particular symptoms or groups of symptoms with tenderness in particular parts of the spine; prolonged muscular contraction; no paralysis of the limbs; no paralysis of the bladder or rectum; no numbness; variability and inconstancy of the symptoms; a nervous constitution.

Spinal tenderness.—In the great majority of cases this symptom would seem to be present in spinal irritation and absent in spinal meningitis, myelitis, or spinal congestion, acute or chronic. It would seem, indeed, to deserve to be regarded as the pathognomonic symptom of spinal irritation; for in the few cases of spinal meningitis, myelitis, or spinal congestion in which it is met with, there is reason to believe that its presence may be accounted for by the association of the phenomena of irritation with those of inflammation or congestion. At any rate, it is certainly the rule that spinal irritation without spinal inflammation or congestion is accompanied by spinal tenderness, and that spinal inflammation and congestion without spinal irritation is *not* accompanied by spinal tenderness. Spinal tenderness, however, can scarcely be spoken of as a prominent symptom in spinal irritation. It is often not complained of until it is specially inquired after; and now and then its existence is not even suspected by the patient until he or she is made to wince under pressure applied to the spine. In a few cases which from their symptoms would seem to come under no other head than that of spinal irritation, there is no spinal tenderness—only five such cases are met with among the 148 cases brought together by the brothers Dr. and Mr. Griffin, and these may without difficulty be in great measure explained away; but such cases are much too exceptional and doubtful to throw discredit on the rule in question, that spinal irritation and spinal tenderness go together. Spinal tenderness, however, does not appear to be equally marked in all forms of spinal irritation. It appears to be much less marked where the irritation shows itself in spasm and prolonged muscular contraction than in the cases where it shows itself in pain; and it is certainly absent in tetanus, which in one sense may be looked upon as the manifestation of spinal irritation in its most aggravated form.

Nervous pains, often in connection with tenderness in a particular part of the spine.—Nervous pains, neuralgias, in one place or another, often intermittent and more or less regularly periodical, and often shifting suddenly from one place to another, are a very common, perhaps the most common, symptom in spinal irritation. They are often brought on or exaggerated by lifting any weight, by twisting or straining the back in any way, or by any effort, mental or physical: and as often they are relieved, to some extent at least, by lying down. Very often, also, there is tenderness in the portion of the spine corresponding to the insertion of the affected nerves—in the upper cervical region, where the pains are in the scalp (clavus hystericus, megrim, and others), face, or neck; in the lower cervical region, where they are in the upper extremities, shoulders, and upper part of the thorax; in the dorsal region, where they are in the lower part of the thorax and upper part of the abdomen (pleurodynia, gastrodynia, infra-mammary stitch, and others); in the lumbar and cervical regions, where they are in the lower part of the abdomen, hips, loins, and lower extremities. In the majority of cases the pain would not seem to be in the part of the spine which is tender, or in any other part. In some cases there may be aching in some part of the spine, or else a sense of weight and heat; but I am very much inclined to believe that these last mentioned symptoms, and "back ache" generally, have often to be referred to spinal congestion rather than to spinal irritation in its uncomplicated form. When the spinal tenderness is very great, slight pressure will often cause pain to strike from the tender spot of the spine to the distant seat of pain, or will bring about or exaggerate this pain. This fact is illustrated in the case I have given, and better still in some of the cases related by the Griffin brothers. In one of these cases, for example, where the whole spinal column was found to be acutely tender, "pressure of the first or second vertebra occasioned pain, which shot forwards from the occiput to the brow; a little lower, pain was excited at the larynx; on pressing one of the lower cervical, it occurred at the point where it dips behind the sternum; on pressing the upper dorsal, at the middle of the sternum; from the third or fourth dorsal to the eighth or ninth, it was excited at the ensiform cartilage; yet lower, at the sides; and in the lumbar vertebræ, pain was excited in the iliac and pubic regions" (p. 19). And in another case, where there was some tenderness of the middle cervical vertebræ, and acute tenderness from the fourth dorsal to the eighth or ninth, "pressure on any of those last, especially the seventh or eighth, brought on violent pain, which darted forwards to the ensiform cartilage. When the last mentioned vertebra was pressed upon, the patient said that she thought her 'heart would break'" (p. 119). The pain is often curiously localized: sometimes it gives the idea of a nail being driven into the part, as in clavus hystericus; sometimes the feeling produced by it is as if a walnut or other hard substance were pressed under a tight belt; sometimes it is very severe, and neuralgic in its character rather than rheumatic: and not unfrequently, when it has existed some time, the painful part becomes tender on pressure. Most generally this morbid sensation is in the form of pain, but now and then it may take that of cold, tingling, itching, or some other feeling which is disagreeable rather than painful. The amount of constitutional disturbance attending the pain varies very much, but it is usually comparatively trifling, and, as it would seem, quite out of proportion to the degree of suffering.

Nausea, retching, vomiting, eructation, &c., often in connection with tenderness in a particular part of the spine.—These are common symptoms in spinal irritation: next to pain, indeed, they are perhaps the most common. They are also intimately connected with certain forms of pain, especially cephalalgia and gastrodynia, sometimes preceding, sometimes accompanying, but more generally following, the pain. As regards the particular part of the spine which is likely to be tender when the stomach is the seat of irritation, the Griffin brothers say that "nausea and vomiting appear to bear more relation to tenderness of the cervical spine, pain of stomach to tenderness of the dorsal; but that where there was soreness of both, nausea and vomiting was still more frequent, and pain of stomach scarcely ever absent." The epigastric disorder in these cases is generally accompanied with tenderness on pressure, not merely in the spine but also in the epigastrium and in the left hypochondrium—with those three patches of tenderness which M. Briquet speaks of as the "trépied hystérique"—as the tripod upon which the diagnosis of hysteria rests.

Spasmodic cough, difficulty of breathing, &c., often in connection with tenderness in a particular part of the spine.—These again are symptoms which are common enough in spinal irritation, and mostly so, as it would seem, when the tenderness in the spine is in the cervical and upper dorsal region.

Palpitation, &c., often in connection with tenderness in a particular part of the spine.—Palpitation is another symptom of spinal irritation which seems to be oftenest met with when there is tenderness in the upper half of the spine. It seems to be not unfrequently associated with a feeling of epigastric pulsation, and with nausea, vomiting, and other signs of gastric disorder. Vascular throbbings in other places, as in the temples, and "chills and flushes," and a disposition to syncope, and other signs of disturbed balance in the circulation, may, and often do, go hand in hand with the palpitation, and seem to have to do with the same condition of the spine.

Irritability of the bladder, often in connection with tenderness in a particular part of the spine.—This was a marked symptom in the case which I have related when the seat of spinal tenderness shifted to the lumbar region, and it seems to be a very common, if not a constant symptom, in cases in which the tenderness is in this region.

The connection of particular symptoms or groups of symptoms with tenderness in particular regions of the spine.—The data best calculated to illustrate this connection are those supplied by Dr. and Mr. Griffin. These consist of no less than 148 cases, of which 26 are in males, 49 in married women, and 73 in girls. In these 148 cases, the spinal tenderness was in the cervical region in 28, in the cervical and upper dorsal region in 46, in the dorsal region in 23, in the dorsal and lumbar region in 15, in the lumbar region in 13, and in the spine generally in 23. In the following table the prominent symptoms connected with each one of these forms of spinal tenderness is set forth in a way which requires no comment except this—that this grouping of symptoms with tenderness in particular parts of the spine must only be looked upon as approximating to the truth, and that now and then any symptom may appear out of the order in which it is set down.

Region of Spinal Tenderness.	*Prominent Symptoms.*
A. *Cervical region.* Cases 28 in number.	Headache, nausea, vomiting, face-ache, fits of insensibility, cough, pains in the upper extremities, etc. ⁂ Nausea and vomiting in 5 cases, pains of stomach in 2 only.
B. *Cervical and Dorsal region.* Cases 46 in number.	In addition to the symptoms in group A, pain of stomach and sides, pyrosis, palpitation, oppression. ⁂ Pain of stomach in 34 cases, nausea and vomiting in 10.
C. *Dorsal region.* Cases 23 in number.	Pain in the stomach and sides, cough, oppression, fits of syncope, hiccup, eructations. ⁂ Pain in the stomach in almost all these cases, nausea or vomiting in only one.
D. *Dorsal and Lumbar region.* Cases 15 in number.	In addition to the symptoms in group C, pains in the abdomen, loins, hips, lower extremities, dysury, and ischury. ⁂ Nausea in only one case.
E. *Lumbar region.* Cases 13 in number.	Pains in the lower part of the abdomen, testes, or lower extremities, dysury, ischury, disposition to paralysis in lower extremities. ⁂ Retching and spasm of the stomach in one case only.
F. *All regions together.* Cases 23 in number.	A combination of the foregoing groups of symptoms, one group changing into another as the spinal tenderness becomes more marked in one region than in another.

Prolonged muscular contraction.—This is a very conspicuous symptom in the case which serves as my text, and it is no uncommon symptom in other cases of spinal irritation. The lower extremities appear to be the parts most commonly affected, one or both of them; but the upper extremities can claim no exception, nor even the muscles of the jaws and neck, trismus or torticollis being among the results in this latter case. "Occasionally," says Mr. Teale, "there is an inability to perform complete extension of the elbow, the arm appearing restrained by the tendon of the biceps, pain and tightness being produced in this part when extension is attempted beyond a certain point;" and to this fact I can testify. Moreover, I can testify as to the not unfrequent occurrence of long-continued closing of the fingers and thumb upon the palm. The rule appears to be, for the extremities to be affected before the trunk or head. This contraction, which is generally painless, may be prolonged for weeks or even months continuously even during sleep, or with occasional intermissions of uncertain duration; and the attacks, primary or secondary, are usually found to begin and end suddenly and unexpectedly. The relations between this form of contraction and that which occurs in other cases, especially in tetanus and in that somewhat vague disorder to which Dr. Trousseau has given the name of tetany (tétanie), are not very easily determined. In tetanus, with very rare exceptions, the contraction is painful, especially in the paroxysmal bouts, and the order in which it attacks the body is different—first, the jaws; then the trunk; and the extremities only at a late period, if at all. In tetany, as in tetanus, the contraction is painful, but the order in which the body is attacked is different to that which is observed in tetanus, centripetal not centrifugal—first, the extremities, then the trunk or head; the contraction, in fact, being confined to the extremities, except in cases of unusual severity. In the way in which it affects the extremities first, and often exclusively, the contraction of tetany agrees with the contraction under consideration, but in other respects it differs. It differs, especially, in being ushered in and accompanied by symptoms which do not seem to form part and parcel of simple spinal irritation; namely, tingling and some degree of anæsthesia, and also (so it is said) in the form of the contracted hand being peculiar—like that which the hand of the accoucheur takes in order to be introduced into the vagina—and in the possibility of bringing on the contraction by firm pressure upon the principal nerves or arteries of the affected muscles. It may be questioned, however, whether there are absolutely fixed lines of division between these different forms of prolonged contraction and whether the difference which exists may not be accounted for as the result of different degrees of irritation, affecting, it may be, different parts of the spinal cord. It may be questioned, also, whether a sufficient case is made out for describing tetany as a definite disorder, and whether it is not rather a form of spinal irritation complicated with some graver spinal disease—spinal meningitis, myelitis, spinal congestion—in varying proportions. The association of tingling and numbness with the prolonged contraction is, as it seems to me, a reason for an affirmative conclusion. At any rate, prolonged muscular contraction, be its significancy in tetanus or tetany what it may must be looked upon as a not unfrequent symptom in simple spinal irritation—as a symptom, too, which is usually of no very grave import. Of this there need be no doubt.

No paralysis of the limbs.—In the case I have given in illustration there was great weakness of the legs, and one leg seemed to "drag" immediately before the contractions came on. There was a disposition to paralysis in the legs, but not more than this; nor do I find paralysis of the limbs among the symptoms of spinal irritation strictly so called. There is, no doubt, a connection between paralysis and spinal irritation which cannot be overlooked; and under that form of paralysis which is known as "hysterical paralysis," and about which more will have to be said in due time, and under spinal irritation, there is a common basis. As it seems to me, however, it is pathologically as well as physiologically incorrect to speak of hysterical paralysis as a symptom of spinal irritation. Also, it seems to me, the right place of this paralysis is after spinal irritation, not along with it, when the capability of morbid action which is implied in the term irritation is worn out; and so in the other exceptional cases in which paralysis is connected with spinal irritation, it will, I believe, be found on careful examination that the paralysis is not a symptom of actual spinal irritation, but of a state of vascular change into which this irritation may issue and has issued—spinal congestion, it may be, or even myelitis.

No paralysis of the bladder or bowel.—The remarks which have just been made apply equally to paralysis of the bladder or bowel. Paralysis in either of these organs, or even a disposition to it, is rarely met with in any case which can be strictly brought under the head of spinal irritation; and in the few exceptional instances which do occur, it is plain enough, when the matter is fairly inquired into, that the boundary has been passed which separates the state of irritation from the state of exhaustion, and that, in fact, the case is no longer one of simple spinal irritation.

No numbness.—Numbness, again, is a symptom which is scarcely ever met with in cases to which the name of spinal irritation is strictly applicable, and, when it is met with, it is easily accounted for. In short, the relationship of numbness and paralysis to spinal irritation appears to be one and the same, the numbness and the paralysis being alike connected, not with the state of morbid action called irritation, but with the after-state of morbid inaction for which exhaustion seems to be one of the appropriate names.

Variability and inconstancy of symptoms.—One most characteristic feature of spinal irritation is the way in which one symptom or group of symptoms may change, and change suddenly, into another symptom or group of symptoms. It is now this disease which is simulated, now that, there being scarcely any disease which may not be simulated: at one time the head is affected, at another the chest, at another the abdomen or the extremities: and the only thing constant among these ever-shifting phenomena appears to be this—that the spinal tenderness changes from one part to another in a manner which is intelligible enough when the connection of the spinal nerves with the affected part is taken into consideration.

A nervous constitution.—The subjects of spinal irritation, with few if any exceptions, may be spoken of as hysterical, hypochondriacal, or nervous. They have, in fact, that nervous constitution which Whytt, following in the steps of Sydenham, showed to be the common basis of hysteria and hypochondriasis. First in order among the signs of this constitution comes that sign which Sydenham regarded as pathognomonic of hysteria and hypochondriasis—namely, a proneness to pass, under or after strong emotion or excitement, large quantities of pale limpid urine. Then come other signs scarcely less characteristic: proneness to tenderness, not only in some part of the spinal column, but also in the epigastrium and left hypochondrium—*le trépied hystérique* of Dr. Briquet already referred to; proneness to sudden and distressing flatulent distension of the stomach and bowels, with loud rumblings and explosions, and with a feeling of a ball rolling about, first in the left flank, and then mounting, or tending to mount, into the throat, where it gives rise to a sense of choking and to repeated acts of swallowing; proneness to bursts of crying and sobbing or of laughing; proneness to sighing, yawning, and stretching the arms; and proneness to fits of convulsive agitation and struggling. Then come a promiscuous series of signs: proneness to erratic pains of a neuralgic character, breathlessness, nervous cough, palpitation, throbbing in the temples, epigastrium, and elsewhere; "flushes and chills," syncope, hiccup, nausea, vomiting, aversion to food or unnatural craving for it, heartburn, oppression at the præcordia, languor, debility, fidgetiness, tremulousness, vertigo (especially on rising hastily), ringing in the ears, "animus, nec sponte, varius et mutabilis," fancifulness and inability to discriminate between fact and fiction, undue lowness of spirits or the contrary, and a host of other symptoms whose name is legion. Not only, indeed, is the name of these different symptoms legion, but there is ever going on a process of mutual metamorphosis in the symptoms themselves; and, in conclusion, it is this very hysterical or hypochondriacal variability and mutability of the symptoms which must be looked upon as the great characteristic of the nervous constitution.

2. Post mortem Appearances.—The morbid structural changes strictly belonging to spinal irritation are *nil.* The disease is nervous or functional in its character, and on this account it leaves no obvious traces after death. Still, as Dr. Copland wisely says, "an affection which may with justice be viewed as functional to-day—as spinal irritation merely—may be inflammation on the morrow, and rapidly followed by the consequences of inflammation." Such a termination, however, is altogether exceptional: and when it does occur, the history during life will show very clearly that any traces of inflammation which are met with after death are to be ascribed, not to irritation, but to inflammation. How far irritation, which involves in its very essence, as I believe, capillary contraction and bloodlessness, not capillary paralysis and congestion, may involve changes which are

opposed to inflammation—deficiency of blood and organic changes brought on by the part being starved for want of blood—remains to be seen. I take it that such changes would have been found if they had been looked for with the same amount of care which has been expended in the search for inflammatory changes: but the investigations have yet to be made which will verify or disprove the conjecture.

3. CAUSES.—Neglect of gymnastic training, insufficiency of wine or other alcoholic drinks, over-indulgence in sexual matters, onanism, would seem to deserve a conspicuous place among the causes of spinal irritation. It is idle, however, to weigh the importance of particular causes, or even to attempt to individualize them, and it is enough to be content with the broad fact that everything which tends to induce a nervous habit—that is, everything which exhausts vital power—must be reckoned as a cause. I believe that the starting-point of the disorder will very often be found in some strain or blow to the back, and I also believe that a congenital predisposition may also be detected in very many cases.

4. DIAGNOSIS.—The fundamental question for consideration in this place is how to distinguish between functional and organic affections of the spinal cord, and this question fortunately is one which is less difficult to answer than it might seem to be at first sight. In fact, the characteristics of spinal irritation indicated by the Griffin brothers, are sufficient of themselves to supply the answer to any one who has tolerably clear ideas respecting the principal diseases with which spinal irritation may be confounded. These characteristics are: "1st. The pain or disorder of any particular organ being altogether out of proportion to the constitutional disturbance. 2d. The complaints, whatever they may be, being usually relieved by the recumbent posture, and always increased by lifting weights, bending, stooping, or twisting the spine. 3d. The existence of tenderness at that part of the spine which corresponds with the disordered organ, and the increase of pain in that organ by pressure on the corresponding region of the spine. 4th. The disposition to the sudden transference of the disordered action from one organ or part to another, or the occurrence of hysterical symptoms in affections apparently acute; and 5th. The occurrence of fits of yawning or sneezing, which, though not very common symptoms, yet, as rarely ever occurring in acute organic disease, may generally be considered as characteristics of nervous irritation."

In the diseases of the spinal cord which have already been under consideration—spinal meningitis, myelitis, spinal congestion, and tetanus—it has been seen that it is the rule for the spine *not* to be tender on pressure, and in spinal irritation it has been seen that such tenderness is so constant as to deserve being reckoned as the distinctive feature. Here, then, is a point of difference which will serve as a guide to a correct diagnosis in several important cases in which guidance is necessary—which will serve as a guide in almost all cases except in that with which spinal irritation is most readily confounded. This case, which is strumous disease of the vertebræ, is one in which spinal tenderness is also present, as well as many other symptoms of spinal irritation—pain in the side, stomach, or bowels, cough, oppression, tightness around the waist, and so on—and in which relief is obtained by reclining. Nay, there may even be in spinal irritation a yielding and projection of the tender vertebræ, with some puffiness of the overlying skin, which simulates in no imperfect manner the earlier stage of angular curvature. There are many resemblances, in fact, but, as Dr. and Mr. Griffin have pointed out, there are also certain differences which are so well marked as not to leave the diagnosis in doubt. Thus it is found: "1st. That strumous disease of the vertebræ attacks the young, and most frequently those under the age of puberty, who are least of all liable to be affected by spinal irritation. 2d. That disease of the vertebræ, when attacking young girls, is seldom accompanied by symptoms of a purely hysterical character, while any serious irritation of the cord can scarcely exist without them. 3d. That an apparent prominence of the tender portion of the spine, which sometimes exists in case of irritation, is never strictly angular; for, if four or five of the vertebræ seem to project, the prominence is nearly equal in all, whereas in caries of the bones it is greatest in the middle, the prominence depending, in fact, on a slight puffing of the ligaments or investments of the spine, and not on displacement or curvature. 4th. That absolute paralysis of the lower limbs is a rare consequence of irritation, and a frequent one of caries of the bones. 5th. That the general health suffers less in the former complaint, and it is not attended with the look of serious organic disease which is indicative of the latter. 6th. That the constitution of the patient may also prove useful as a guide, the disposition to spinal irritation, as well as to scrofula being hereditary."

5. Prognosis.—However urgent the symptoms may be, the prognosis in spinal irritation is favourable rather than unfavourable. It must always be borne in mind, however, that spinal irritation is a state which may issue in inflammatory or other organic changes in the cord or in its membranes, and that a favourable prognosis must be qualified by this contigency, especially in those cases in which there is some obvious vice of the constitution—scrofulous, gouty, rheumatic, syphilitic, or other.

6. Treatment.—"Local depletion by leeches or cupping," says Mr. Teale, "and counter-irritation by blisters to the affected portion of the spine, are the principal remedies. A great number of cases will frequently yield to the single application of any of these means. Some cases, which have even existed for several months, I have seen perfectly relieved by the single application of a blister to the spine, although the local pains have been ineffectually treated by a variety of remedies for a great length of time." Of the efficacy of blisters in these cases I have had abundant proof. As to the good effects of local depletion I have had less experience, partly because I found that the blisters were sufficient of themselves, and partly because I believe that the state of irritation is associated with a state of capillary contraction and bloodlessness, and not with a state of capillary paralysis and congestion.

Still, I can well believe that there are many mixed cases in which irritation has issued in some degree of capillary paralysis and congestion, especially in the skin at the seat of spinal tenderness, and in which this state will be greatly relieved by local depletion.

As regards medicine, I should certainly be disposed to trust most in common tonics—quinine, steel, or cod-liver oil; to the latter in conjunction with some preparation of phosphorus most of all, perhaps. And certainly I should be disposed to fight against pain and spasm, as I have sufficiently explained elsewhere, by remedies which rouse the circulation to greater activity, and not by those which have a contrary action. Nay, I should even have more confidence, as a local application for pain, in some application which would produce a hyperæmic condition of the skin, than in any one which had a deadening effect upon the sensitiveness of the part.

It is, no doubt, an indispensable part of the treatment to avoid standing or walking to the extent of producing fatigue, but there would seem to be no necessity, except as a very temporary measure, perhaps, to insist upon a recumbent position being retained for any length of time. Upon this point Mr. Teale says (and he says all that need be said), " When my attention was first directed to this subject, I considered recumbency a necessary part of the treatment: it is, for a moderate length of time, undoubtedly beneficial, and frequently very much accelerates recovery; but subsequent observation has convinced me that it is by no means essential. I have seen several instances of the most severe forms of these complaints, occurring in the poorer classes of society, where continued recumbency was impracticable, which have, nevertheless, yielded without difficulty to the other means of the treatment, whilst the individuals were pursuing their laborious avocations."

As regards diet I have only this to say—that I believe the great thing to be done is to supply wine or some other alcoholic drink as well as nutritious food in sufficient quantity. I believe that nutritious food in itself is not enough. In very many cases it it found that alcoholic drinks are either abstained from altogether or taken in very insignificant quantities from a fear that they will aggravate the pain or spasm, or for some other reason: in very many cases it is found also that relief is obtained only when this practice is abandoned, and the diet made to include at least an average share of the drinks in question. Indeed, the result of my own experience is unequivocal in this respect —that the somewhat bold use of alcoholic drinks is a cardinal point in the treatment of spinal irritation, and that this indication must be fully acted upon if this treatment is to lead to anything like satisfactory results.

Of the spinal maladies remaining to be noticed the principal are these: General spinal paralysis, hysterical paraplegia, reflex paraplegia, infantile paralysis, hemorrhage, non-inflammatory softening, induration, atrophy, hypertrophy, tumour, concussion, compression, caries of the vertebral column, spina bifida, &c.

VI. General Spinal Paralysis.

There is a form of general paralysis to which Dr. Calmeil gave the name of general paralysis of the insane, and with which all who know anything of insanity are sufficiently familiar. It may coexist with any form of insanity, but it is most commonly associated with the monomania in which the patient believes himself to be possessed of superhuman power and unbounded opulence. The first signs are likely to be thickness of speech, quivering of the lips and tongue, fumbling and clumsy movements of the fingers, with an unsteady and sidling gait. Then the urine escapes now and then involuntarily, or even the feces. Once begun, the downward course of the malady is headlong, and in a few months, in a few weeks it may be, within two or three years at the most, the patient is in bed, altogether without the power of supporting himself on his feet, unable to use his hands so as to help himself in any way, incapable even of turning over in bed much less of sitting up, requiring to be fed like a child, and, when fed in no small danger of choking if left to masticate the morsels, with urine and feces escaping under him unheeded, and with every power of body and mind an utter wreck. With few exceptions the thickness of speech shows that the muscles of the tongue and lips are the first to fail, but in fact all parts of the muscular system show signs of weakness about the same time, and it is difficult to fix upon any one part and say that it is affected before the rest. Sometimes, the paralyzed muscles become considerably atrophied, but the rule appears to be that such atrophy is less marked than in cases where the paralysis is the result of disease in the spinal cord: always, according to Dr. Duchenne, the paralyzed muscles, whether atrophied or not, retain their full share of electric contractility. After death signs of disease are found in the brain, but not in the spinal cord; these signs being increased vascularity, with serous or sero-fibrinous infiltration in the pia mater, in the cortical substance, and in the brain structure generally.

General spinal paralysis is the name used by Dr. Duchenne to describe a form of paralysis which, until he pointed out the differences, was confounded with general paralysis of the insane. Looking hastily at the phenomena of paralysis when clearly developed, it is, indeed, not to be wondered at that these two disorders should have been confounded; but in reality general spinal paralysis, as defined by Dr. Duchenne, possesses peculiarities which are sufficiently characteristic. In general spinal paralysis the mental faculties are natural; in general paralysis of the insane they are fundamentally deranged. In general spinal paralysis the electric contractility of the paralyzed muscles is abolished or greatly impaired; in general paralysis of the insane it is intact. In general spinal paralysis the paralysis usually begins in the legs and travels upwards, often remaining in the lower parts of the body a long time before attacking the tongue, face, and upper extremities: in general paralysis of the insane all parts of the muscular system would seem to be affected simultaneously, or, if there be any difference as to time, it is the tongue and the upper parts of the body which are the first to suffer. In general spinal paralysis there is a marked disposition to atrophy in the paralyzed muscles and elsewhere, to bed-sores, and to other signs of defective nutrition; in general paralysis of the insane these evidences of wasting are, to say the least, far less conspicuous. In general spinal paralysis the progress of the disease is slow, often extending over several years; in general paralysis of the insane the whole course of the disease is comprised within three or four years at most. In general spinal paralysis the post-mortem signs of disease are in the spinal cord and not in the brain; in general paralysis of the insane the reverse of this obtains, the cord being healthy and the brain the seat of disease. Much, no doubt, remains to be done before it is possible to speak positively as to the character of the diseased changes in the cord which are met with in general spinal paralysis; and at present it must suffice to say, that in one case related by Dr. Duchenne there was softening and injection of the anterior columns in the cervical region of the spinal cord, and that in one case which I had the opportunity of examining, there was want of proper consistence, not exactly amounting to actual softening, and a perceptible degree of atrophy, in these columns throughout the whole of their course from the middle of the neck downwards. Whether general spinal paralysis will prove to have that relation to disease of the anterior columns of the cord which locomotor ataxy has to disease of the posterior columns, remains to be seen.

General spinal paralysis blends, no doubt, with other spinal diseases, and its symptoms vary accordingly; but still it occurs with sufficient frequency in the form described by Dr. Duchenne to deserve the position which he assigns to it as an individual malady. There are also relations equally intimate between general spinal paralysis and cerebral maladies, and I am very much disposed to think that the cases in which the mental powers are obviously weakened will be found to be at least as numerous as those typical cases in which these faculties are natural. At the same time, it must be borne in mind that in some cases of general spinal paralysis the mind may seem to be weakened, when in reality it is not so—that in some cases there may be an air of stupidity, or even fatuity, arising from the slow play of the features, the thickness of the speech, the fumbling of the fingers, and like symptoms, which air has its origin in the paralyzed state of the muscles and not in the enfeebled state of "the man behind the mask."

General spinal paralysis cannot be confounded with local Cruveilhier's atrophy, or lead palsy, and it must not be confounded with the general forms of these maladies. In general Cruveilhier's atrophy, as well as in local, the atrophy of the muscles is partial, certain muscles being, as it were, dissected out, and others left untouched, capriciously; in general spinal paralysis the atrophy is *en masse*. In general Cruveilhier's atrophy, what remains of muscle obeys the will and reacts with electricity properly—there is no paralysis; in general spinal paralysis there is true paralysis, and the paralyzed muscles have lost their electric contractility. In general lead palsy, also, the history will be sufficient to prevent any confusion as to diagnosis—the paralysis at first electing the extensor muscles of the forearm, the blue line upon the gums, the colic, the constipation, the possibility of lead contamination, and so on.

As regards treatment there is nothing to be said except that it must be conducted upon the same principles as those which apply in analogous cases.

VII. HYSTERICAL PARAPLEGIA.

Paralysis is certainly entitled to a place among the symptoms of hysteria. Dr. Briquet met with it in 113 out of 430 hysterical patients, its seat being in the four extremities and in the principal muscles of the trunk in 6, in the left arm and leg in 46, in the right arm and leg in 14, in both arms in 5, in the left arm only in 7, in the right arm only in 2, *in both lower limbs in* 18, in the left lower limb in 4, in the feet and hands in 2, in the face in 6, in the larynx in 3, in the diaphragm in 2; and my own smaller experience is more in harmony with these statistics than with the statement of Todd, that the face and tongue escape in hysterical paralysis, that the hemiplegic form of paralysis is less common than the paraplegic, and that "hysterical aphonia" is the form which is most frequently met with.

Hysterical paralysis, so called, is generally met with in persons of a nervous habit of body, and in conjunction with symptoms of an unmistakably hysterical character. As a diagnostic feature, Todd laid stress on a peculiar expression of countenance, which he denominated *facies hysterica*—an expression characterized by a remarkable depth and prominent fulness, with more or less thickness, of the upper lip, and by a peculiar drooping of the upper eyelids, and, as it would seem, with good reason. Often, moreover, there is a definite history of symptoms which clearly come within the category of hysterical phenomena—emotional excitability, globus, plentiful gushes of pale urine, and the rest. In diagnosing hysterical paralysis, however, it is not necessary to trust solely, or even chiefly, to evidence such as this, for the paralysis itself is found to have certain features which in themselves are sufficiently distinctive.

Hysterical paralysis is characterized by the paralysis being more or less incomplete, by a marked degree of numbness being associated with it, and chiefly (according to Dr. Duchenne) by the paralyzed muscles, which are not wasted, *having lost their electro-sensibility without losing their electro-contractility*—a loss which, by the way, does not support Sir Benjamin Brodie's opinion that it is the power to will contraction, and not the power of executing the orders of the will, which is at fault in this form of paralysis.

It would also seem to be a peculiarity of hysterical paralysis, as well as of hysterical hyperæsthesia, anæsthesia and clonic convulsion, to affect the *left* side of the body rather than the right. Thus, M. Briquet found pleurodynia nineteen times, hyperæsthesia and anæsthesia five times, clonic convulsion twice, and paralysis thrice as frequent on the left side as on the right side. He found, indeed, a state of things which presents a contrast to what is met with in rheumatism, neuralgia, pleurisy, pneumonia, and other maladies, in all of which it is the right side of the body which is most prone to suffer.

Very frequently, I believe, hysterical paralysis is preceded by symptoms which come under the head of spinal irritation, and not unfrequently, especially when the upper part of the body is affected, it is ushered in by emotional and other symptoms which may at times deserve to be spoken of as an attack of hysteria.

Hysterical paraplegia agrees in its essential features with other forms of hysterical paralysis. The paralysis is usually incomplete. Numbness of the paralyzed parts is a conspicuous phenomenon; as conspicuous, it may be, as the paralysis. The paralyzed muscles have lost their electro-sensibility without losing their electro-contractility. The bladder and bowel (as much apparently for want of proper sensibility as from true paralysis) are little under control, if at all; less so, as a rule, than in common paraplegia. The paralysis is often preceded by symptoms of spinal irritation, in the lumbar region especially—spinal tenderness, pains about the pelvis and in the legs, irritability of the bladder, and the rest; and now and then it is ushered in by some ordinary hysterical disturbance of one kind or other. And where one leg only is affected, there would seem to be, as Todd pointed out, a gait which is not less characteristic than that which is seen in common hemiplegia. In common hemiplegia the trunk in walking is first of all inclined to the sound side, and the whole weight of the body made to rest upon the sound leg, and then the paralyzed limb is raised from the ground and thrown forwards by swinging it outwardly; the whole series of movements being very like those which are necessary in walking with a wooden leg. In hysterical paralysis, where one leg only is affected, the paralyzed limb, instead of being raised from the ground, as in common hemiplegia, and thrown forward by an outward swing, is dragged directly forward, with the foot trailing on the ground.

The prognosis in hysterical paralysis would always seem to be favourable. Sooner or later, in one way or another, a cure is brought about, most tardily; perhaps, in the paraplegic form of the disorder.

As regards treatment, all that need be said is, that general rules must be followed out, and that, if anything special has to be done, most help will probably be derived from sharp faradization with electrodes which allow the currents to act on the sentient nerves rather than on the muscles—that is, with metal ends rather than with the moistened sponges commonly used. At any rate, sharp practice of this kind has often served to bring about results as sudden and satisfactory as those which have now and then followed the exercise of faith in the power of St. Médard and other kindred agencies.

VIII.—Reflex Paraplegia.

Paraplegia is one of the consequences of primary disease in the spinal cord: of this there can be no doubt. Paraplegia may also be the result of disorder or disease beginning at a distance and affecting the cord secondarily—beginning in the urinary and genital organs more especially: of this there can be but little doubt. In the former case the paraplegia is spoken of as centric; in the latter as eccentric or *reflex.*

The chief characteristics of that form of reflex paraplegia which is associated with disease of the urinary organs—*urinary paraplegia*, as it is often called—the commonest and most important of all the forms of reflex paraplegia, as it certainly is, are these; or at any rate these are those upon which Dr. Brown-Séquard, who has paid much attention to this subject, insists. Usually the paralysis is incomplete both as to degree and extent, some muscles being obviously more affected by it than others. Usually the paralysis is *not* associated either with tingling, or numbness, or anæsthesia. Usually the bladder and rectum are only slightly implicated in the paralysis. Usually there are changes for the better or the worse in the degree of paralysis corresponding to changes for the better or worse in the disease of the urinary organs. Usually there is no marked atrophy in the paralyzed muscles. Not unfrequently a cure or marked amelioration in the paralytic condition is brought about by the removal of the disease in the urinary organs. Dr. Brown-Séquard indicates these as the chief characteristics of reflex paraplegia connected with disease of the urinary organs, and of other forms of reflex paraplegia as well, the only difference in the description of these latter forms of disease being the substitution for the term urinary of the name which indicates the starting-point for the paralysis.

Thus defined, reflex paraplegia differs diametrically from the paraplegia produced by myelitis. In paraplegia from myelitis the paralysis is usually complete, and all the muscles are affected equally: not so in reflex paraplegia. In paraplegia from myelitis the paralysis is associated with tingling, numbness, or anæsthesia: not so in reflex paraplegia. In paraplegia from myelitis paralysis of the bladder and lower bowel is a marked phenomenon: not so in reflex paraplegia. In paraplegia from myelitis the paralyzed muscles are usually atrophied and degenerated: not so in reflex paraplegia. In paraplegia from myelitis cure, or even improvement, is the exception: in reflex paraplegia it is the rule.

It is, indeed, easy enough to find marked differences between paraplegia from myelitis and reflex paraplegia: but the case is far otherwise when a comparison is instituted between paraplegia from spinal congestion and reflex paraplegia. In reflex paraplegia the paralysis is incomplete, and all muscles are not affected equally: in paraplegia from spinal congestion it is so also. In reflex paraplegia the paralysis is not associated with tingling, numbness, or anæsthesia: in paraplegia from spinal congestion it is the same, with the single exception, that there may be at one time or other a trifling degree of tingling at the extreme tips of the fingers or toes. In reflex paraplegia there are fluctuations in the degree of the paralysis: so also in paraplegia from spinal congestion. In reflex paraplegia there is no marked change in the nutrition of the muscles: so also in paralysis from spinal congestion. And, lastly, in reflex paraplegia, as in paraplegia from spinal congestion, a cure is neither an impossible, nor even an improbable event. As to essential characteristics, indeed, I can find marked differences when reflex paraplegia is compared with paraplegia from myelitis, but none when reflex paraplegia is put in comparison with paraplegia from spinal congestion.

Nor is reflex paraplegia *always* to be distinguished by being obviously *preceded* by eccentric disorder in the urinary organs or elsewhere. It is, indeed, as Dr. Gull has well pointed out, "not always easy to determine at this point whether symptoms have a central or a peripheral origin . . . . There is, perhaps, no fact to be more insisted upon than the normal dependence of the sympathetic upon the integrity of the spinal system. As a result of this dependence we learn that dyspepsia, vomiting, constipation, colic, vesical catarrh, prostatic irritation, pains in the joints, and many other peripheral disturbances, may seem to precede the central malady, and to be the cause of it, when in truth they are its effects." And again: "It is no new fact in medicine, that cerebral exhaustion may impair the functions of the cord (especially of the lower segments), and give rise to precisely those symptoms which have been set down as pathognomonic of urinary paraplegia."

Dr. Brown-Séquard has taken a very different view of reflex paraplegia to that which is here taken. He regards this disorder as due, not to spinal congestion, but to a state of the circulation diametrically opposed to this. He believes that a state of irritation, commencing eccentrically, is propagated along the vaso-motor nerves, of which the result is, primarily, contraction of bloodvessels in, and secondarily, exclusion of the due amount of blood from, one or more of the three parts following—the spinal cord, the nerves proceeding to or coming from the cord, the muscles. He believes that the proper activity of the nervous tissue or muscle is starved into paralysis for want of blood; and he founds this view on the fact that a state of irritation in the vaso-motor nerves may proceed from a distant point and produce contraction of the vessels, and upon the fact that traces of organic disease are wanting after death in many cases of reflex paraplegia. The argument, indeed, is all but as conclusive as it is masterly and original. The same evidence, however, admits of a very different construction, and that even without anything like special pleading. It is, no doubt, true enough that a state of irritation in vaso-motor nerves may lead to contraction in bloodvessels and thereby exclude a due amount of blood from the part to which these vessels belong; but it is not less certain that the same state of irritation carried beyond a given degree, either in time or in intensity, may, by paralyzing the vaso-motor nerves, lead to relaxation of vessels, and, thereby, to the admission into them of an undue amount of blood. Moreover, it may also be assumed, as a thing by no means improbable, that the contraction of the coats of the relaxed and paralyzed vessels in rigor mortis may prevent any marked traces of such vascular engorgement being met with after death; at any rate it is impossible to infer from the absence of such traces of congestion after death, that there was no such congestion during life. Indeed, the evidence adduced by Dr. Brown-Séquard in favour of his theory of reflex paraplegia is in itself insufficient to decide whether his view or that which I venture to put in opposition to it is the correct one, for in reality it may be used equally in support of either view. And certainly it would seem to be a collateral objection to the view which connects reflex paraplegia with a state of capillary contraction and comparative bloodlessness brought about by irritation in vaso-motor nerves, that in states where the whole nervous system is in a state of great irritation, as in tetanus, and in the state specifically designated spinal irritation, and where it may be assumed that the vaso-motor nerves participate in this state of irritation, and produce vascular contraction and comparative bloodlessness in the spinal cord and elsewhere, that paraplegia or any form of paralysis is precisely the symptom which is not present. Moreover, Dr. Gull makes some remarks on urinary paraplegia which have an important collateral bearing on the subject in hand, and which tend in no ordinary degree to support the conclusion to which all the previous considerations tend: "If," he says, "we regard the nature of the urinary disease which most commonly leads to paraplegia, we shall find that it is an inflammation, either in the prostate, bladder, or kidneys; and we shall also find, that it is only after chronic inflammation has lasted a long time that the paraplegic weakness supervenes. It is in just those cases where there is most irritation, and but little inflammation, that paraplegia does not occur. Uric acid and oxalate of lime calculi may cause hæmaturia and any amount of irritation, but unless *suppurative* inflammation set in, paraplegia is not produced. A review of all the recorded cases of urinary paraplegia will show that it is the *inflammatory* condition of the urinary organs which leads to paralysis, and not one of irritation."

In speaking in this manner, however, I do not wish to confound reflex paraplegia with spinal congestion. On the contrary, the more I see of practice the more I am disposed to think that there is a reflex variety, not only in paraplegia from spinal congestion, but in every form of paraplegia; that, in fact, the causes at work in producing all spinal maladies are reflex in their character as well as centric, reflex, it may be, rather than centric.

If the true view of reflex paraplegia be the one which is here taken, it follows that the treatment of that form of this disorder which is defined by Dr. Brown-Séquard will be substantially the same as the treatment of paraplegia from spinal congestion, and not that which has been recommended on the supposition that the spinal cord is starved for want of blood in consequence of its vessels being kept in a state of contraction by irritation of the vaso-motor nerves. Nay, even the necessity to treat eccentric disorder or disease in the urinary organs or elsewhere can scarcely be considered a peculiar feature in the treatment of reflex paraplegia; for, in fact, it is always an essential part of any sound plan of treatment in any disease of the spinal cord, whether originating in the cord or at a distance from the cord, to make a point of doing everything to remove or mitigate any eccentric malady. It is always necessary to do this, because an eccentric malady, whether primary or secondary to the spinal disorder, or whether having no other than a purely accidental relation to this disorder, invariably *reacts* prejudicially upon the cord. This eccentric malady must of course be dealt with on general principles, this thing or that being done according as irritation or inflammation may happen to be the predominating condition. In urinary paraplegia, for example, it is very possible that the local application of opium, or belladonna to the urethra, as recommended by Dr. Brown-Séquard, may be of much use; this is very possible on any hypothesis: but with respect to the frequent introduction of catheters, with a view to relieve irritation, I think it is difficult to come to a different conclusion to that which Dr. Gull has arrived at. "This course," says this able physician, "is not unattended with danger. There is no part of the treatment which calls for more discrimination. The diseased textures and veins about the neck of the bladder are so prone to suppuration, that the catheter is often a fatal weapon. The few scattered instances, such as that recorded by Dr. Graves, where immediate good effects have followed, have had undue influence towards promoting mechanical interference. Carefully considered, they do not warrant the inference drawn from them. If the urinary passages are so contracted that the bladder cannot empty itself, the catheter is obviously required; but it must be simply prescribed on these grounds. The rule for its use is the same as in the treatment of the aural passages, when the middle ear is diseased. If there be a free exit for the excretions, the less mechanical interference the better. As meddlesome midwifery is bad, so is the meddlesome employment of the catheter in urinary paraplegia. Cases might be quoted where a fatal issue has been induced by the meddlesome interference with a diseased bladder, under the hope of removing some hypothetical cause of reflex irritation."

IX.—Infantile Paralysis.

This disorder, to which attention seems to have been directed first of all by Underwood; Marshall Hall, and Kennedy, is the *paralysie* (*dite essentielle*) *de l'enfance* of several French writers. It attacks children indiscriminately, without any regard to sex, between the age of six months and two years, at the time of the first dentition more especially; and it is the grand source of shrivelled, half-dead limbs, club-feet, and other sad deformities.

Mr. William Adams, who has had ample opportunities of becoming practically acquainted with the history of infantile paralysis, and whose account of this disorder is more to the point than any other with which I am acquainted, indicates these as the most trustworthy characteristics: 1. The paralysis is usually partial, single muscles or groups of muscles only being affected. 2. The sensation in the paralyzed parts is usually perfect, or all but perfect. 3. The bladder and lower bowel are usually not distinctly implicated in the paralysis. 4. The paralyzed muscles are at no time rigid. 5. Great improvement or complete recovery is the rule, and not the exception. The paralysis is usually neither accompanied nor preceded by "head symptoms."

The onset of the disorder is generally sudden and unexpected. The child is put to bed well, and in the morning it is found to be paralyzed. Or the paralysis may be grafted upon some marked febrile disorder, as gastric or remittent fever, measles, or typhus; or upon some other malady, as hooping-cough and pneumonia. In some cases there may be transitory and trifling feverishness at first, but fever is certainly no essential accompaniment at any time. Now and then, but only in exceptional cases, the disorder may be ushered in by convulsions or drowsiness.

The paralysis has usually a wider range at first than that which it takes afterwards; in other words, the paralysis is more or less general at first, and more or less localized afterwards. Thus it is a common thing for all the limbs to be attacked and for only one leg to remain paralyzed, or, rather, to remain partially paralyzed, for there is a certain degree of recovery in certain muscles, even in the worst cases. It is the constant rule, indeed, for recovery to be slower in the legs than in the arms, and in certain muscles than in others. Usually the disease does not mount high enough to paralyze muscles whose nerves are given off above the true limits of the spinal cord. There is certainly no loss of sensation in infantile paralysis. On the contrary, as Dr. West remarks in his admirable treatise on the diseases of infancy and childhood, "sensation in the affected limb appears to be exalted when the paralysis is recent, the degree of hyperæsthesia in the early stage being in such cases proportionate to the loss of power which afterwards is apparent." Moreover Dr. West proceeds to say, "In some instances the exaggerated sensibility continues for several weeks, though this is unusual; and when this is the case, the leg being the seat of the affection, and the paralysis incomplete, the existence of hip-joint disease may very likely be suspected. In such a case the child bears all its weight on the healthy limb, turns the foot of the affected side inwards when walking, and stands with the toes of that foot resting on the dorsum of the foot of the healthy side. Still it will usually be found that the exaggerated sensibility of the paralyzed limb varies greatly at different times, while that extreme increase of suffering produced in cases of hip-joint disease on striking the head of the femur against the acetabulum by a blow upon the heel, and the fixed pain in the knee of the affected side, so characteristic of diseases of the hip-joint, are absent; and these points of difference will enable you to distinguish between the two affections. One other important means of diagnosis is furnished by the presence or absence of an increased temperature over the suspected joint, the value of which easy observation in determining the presence or absence of inflammation about any particular spot is dwelt upon by Mr. Hilton in his lectures delivered recently at the College of Surgeons."

The peculiarities of infantile paralysis, so thinks Mr. Adams, point to a special pathology which has yet to be made out satisfactorily. As it seems to me, however, these peculiarities, instead of showing, as Mr. Adams believes, that infantile paralysis is unlike paralysis in adults, only show a close analogy to, if not an actual identity with, the paralysis which has been seen to result from spinal congestion. In infantile paralysis the paralysis is partial: in paralysis from spinal congestion it is the same. In infantile paralysis sensation is exaggerated rather than dulled in the paralyzed parts: in paralysis from spinal congestion it is the same. In infantile paralysis the bladder and lower bowel are obedient to the will: so also in paralysis from spinal congestion. In infantile paralysis the paralyzed muscles are limber, not rigid: so also in paralysis from spinal congestion. In infantile paralysis recovery more or less complete is the rule rather than the exception; so also, and very much in the same order, in paralysis from spinal congestion. In infantile paralysis "head symptoms" are exceptional phenomena at any time: so also in the paralysis from spinal congestion. Neither do I know of anything to invalidate the conclusion which those resemblances would seem almost to necessitate—that infantile paralysis, as defined by Mr. Adams, is nothing more than paralysis from spinal congestion.

Moreover, this conclusion is not discredited by the disclosures of morbid anatomy. There were no traces of organic disease either in the spinal cord or brain or nerves in the four cases of genuine infantile paralysis which were examined after death by MM. Barthez and Rilliet, Dr. Fliess, and Mr. Adams, all four most competent observers. The evidence supplied by these cases is indeed purely negative. Nor is evidence more positive to be found in the two cases examined after death by M. Laborde, the writer of a very able treatise on infantile paralysis recently published. In these two cases, without doubt, there were certain organic changes in the spinal cord and in some of its nerves, but these changes are plainly not essential to infantile paralysis as defined alike by M. Laborde and Mr. Adams, for the simple fact is, that the clinical history of these cases is not clearly that of infantile paralysis so defined. In a word, there is nothing in the scanty contributions of the dead-house to show that the very closest relations may not exist between the disorder under consideration and spinal congestion.

The duration of infantile paralysis is very variable. It may pass off in a few days, or even a few hours: it is more likely to occupy several weeks or months in this process of improvement. Improvement, to a greater or less degree, is indeed the rule, and not the exception; and it may even be said that the cases which stop far short of recovery are by no means common. Mr. Adams says, "It is generally supposed that, unless recovery takes place within a few months, the paralysis is persistent through life; but I have seen many cases in which improvement has proceeded, to a very useful extent, several years after the seizure;" and to the truth of this remark my own experience bears ample testimony. Indeed, I should say from what I have seen, that if the paralyzed muscles retain their electro-contractility and electro-sensibility, and so show that they have not passed into that state of fatty degeneration into which they always tend to pass eventually, there appears to be scarcely any limit to the time in which improvement, and even complete recovery, is possible.

The groups of muscles most frequently affected in infantile paralysis, according to Mr. Adams, are, 1. The muscles of the anterior part of the leg, forming the extensors of the toes and the flexors of the foot; 2. The extensors and supinators of the hand, these muscles being always affected together; and 3. The extensors of the leg, and with them generally the muscles of the foot, as in the first group. When single muscles are affected, the most likely to suffer are these: 1. The extensor longus digitorum of the toes; 2. The tibialis anticus; 3. The deltoid; and 4. The sterno-mastoid.

The deformities produced by infantile paralysis are most frequently met with in the feet and legs, because these are the parts most frequently affected; and the particular kind of deformity varies, of course, with the muscles involved in the paralysis.

"The most frequent kind," says Mr. Adams, "is that of (1) talipes equinus; and the other deformities occur in the following order—(2) equino-varus; (3) equino-valgus; (4) calcaneus, or calcaneo-valgus; and (5) talipes varus. When both feet are affected, equino-varus of one foot is generally found with equino-valgus of the other."

Mr. Adams is of opinion that the great cause of the deformities which are met with in infantile paralysis is the "adapted atrophy" of Mr. Paget, this change taking place chiefly in the opponents of the muscles which have suffered from paralysis. If, for example, the anterior muscles of the leg are paralyzed, the anterior portion of the foot drops, and the heel is raised, not by active contraction of the posterior muscles—for division or paralysis of one set of muscles does not excite active contraction in the opponent muscles—but in consequence of the position assumed by the foot from its mechanical relations with the leg. Another cause of deformity is obviously atrophy and actual or comparative arrest of development in the paralyzed muscles; for, unless the paralysis soon passes off, it is plain that the muscles will not only waste, but be left behind in the rapid process of development which is everywhere at work in a young and growing child. Mr. Adams is also of opinion that the early and late rigidity of Todd and true spasm have very little to do in causing the deformities in question: and so it may be in the deformities connected with that form of paralysis to which he restricts the term infantile—that form which is undoubtedly the common variety of infantile paralysis, and which, as it would seem, is dependent on spinal congestion. It is very certain, however, that infants and children are liable to more than one form of paralysis, and that there are deformities associated with rigid as well as with flaccid muscles. It is very certain that this rigidity may be either "early" or "late," as distinguished by Todd, or even still more decidedly spasmodic than that form which is called "early rigidity." In a word, infantile paralysis is a designation as little to be defended as would be the term adult paralysis; for on inquiry it is found that in children, as in adults, there is more than one form of paralysis, and that all the forms which may happen in adults may be repeated in children. The form of paralysis which has been described as infantile is unquestionably the commonest, and the other forms are so uncommon as to be little more than exceptional; and this, in fact, is all that can be said to justify the notion that infantile paralysis is a definite disorder of the spinal cord peculiar to infants.

The treatment of the deformities, especially of club-foot, resulting from the so-called infantile paralysis, is a subject of much practical interest and difficulty. Mr. Adams says: "The probability of benefit in such cases by any surgical procedure seems scarcely ever to be entertained. The existence of paralysis is supposed to contraindicate any surgical interference; but, from these apparently hopeless and essentially incurable cases some of the most striking and most valuable results of surgery are obtained by a combination of surgical and mechanical treatment. Mechanical aid, alone, is frequently sought from the instrument-maker, but his art is powerless when any considerable amount of deformity exists; and it is only by a scientific combination of surgical and mechanical skill that much good can be effected. In all these cases the treatment essentially consists in the removal of existing deformities by tenotomy and mechanical means, and a subsequent compensation for the existing paralysis by mechanical support, varying in different cases according to the extent of the paralysis." And no doubt very satisfactory results are obtained by those means. At the same time it is certain that in many cases very satisfactory results may be obtained without tenotomy, and without apparatus, by means used with the view of bringing back power into the paralyzed muscles—electricity,[1] movements of various kinds, shampooings, and others; and my own experience has convinced me that this fact is not yet sufficiently recognized and acted upon in practice. That in many cases neither tenotomy nor apparatus can be dispensed with I fully believe: that in all cases the electrical and gymnastical parts of the treatment are of primary rather than of merely secondary importance I am every day more and more convinced, because every day I meet with instances of muscles which I should once have looked upon as hopelessly paralyzed being resuscitated by those means. Indeed, I cannot but think that so long as institutions specially set apart for orthopædic purposes are wanting in properly furnished electrical rooms and gymnasiums, there must be in some essential points a necessity for a great reformation in orthopædic practice.

X.—Hemorrhage.

Blood may be effused into the substance of the cord between the arachnoid and pia mater, into the sac of the arachnoid, between the dura mater and arachnoid, or between the dura mater and the osseous canal—anywhere in or about the spinal cord, in fact. Hemorrhage in the substance of the cord, the *hœmatomyélie* of Ollivier, may be a consequence of myelitis, the bloodvessels breaking up in the softening of the cord, and so allowing the blood to escape. It was so in the acute case which I took as my text when speaking of myelitis, for here the blood was collected at one point in the softened nerve matter to an extent which at first sight suggested the idea of hemorrhage into the cord rather than that of myelitis. Hemorrhage under or upon the spinal membranes, the *hæmatorachis* of Ollivier, may be a consequence of cerebral hemorrhage, the blood overflowing from the cranial into the spinal cavity, and perhaps mixing with the spinal fluid; or it may result from spinal congestion, spinal meningitis, myelitis, tetanus, hydrophobia, and certain other maladies. All these cases, however, are so uncommon as to be little more than exceptional. In fact, hemorrhage either into the substance of the cord, or under or above the spinal membranes, except as the result of some accidental injury to the spine, as in death by hanging, or in cases of still-birth where it has been necessary to employ much force to bring about the delivery, is, to say the least, a very uncommon affection.

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[1] There are certain forms of paralysis in which the paralyzed muscles do not react to the most powerful induced electric currents, but react energetically to a galvanic current of low tension, slowly interrupted (the *labile current* of Remak). The diagnostic and therapeutic bearings of this fact have yet to be worked out, but so far the therapeutic promise is good. The phenomenon in question has been already observed in several very different cases—in facial palsy (first noted by Baierlacher), in certain cases of infantile paralysis (discovered by J. Netten Radcliffe, of London, and Hammond, of New York, independently of each other), in certain cases of local palsy, *e. g.*, palsy of the extensors of the forearm and of other muscles, from lead poisoning (Bruckner and J. N. Radcliffe), in paralysis of the deltoid, not from lead (J. N. Radcliffe), in certain cases of muscular atrophy (J. N. Radcliffe), and in paralysis from traumatic injury of a nerve (Bruckner).

The symptoms of spinal hemorrhage are by no means clearly marked. Sudden and acute pain in the spine at the seat of the effusion, and sudden paralysis and loss of sensation, more or less complete, in the parts below this point, appear to be the chief symptoms where extensive hemorrhage has taken place into the substance of the cord. Sudden and acute pain in the spine would also seem to be a prominent symptom in hemorrhage below or above the spinal membranes, but not sudden paralysis and anæsthesia. In this latter case, indeed, instead of paralysis there have been some convulsive or spasmodic symptoms, and instead of anæsthesia some hyperæsthesia. In some cases, as in one quoted by Dr. Copland, the pain may not be in the back, but at a distance from the back; and in other cases, and this not unfrequently, pain may be greatly masked by the shock of the accident which has caused the hemorrhage, or by the shock attendant upon the laceration of the spinal cord by the effused blood. When the hemorrhage is in the medulla oblongata, and high up in the cord, the symptoms may be rather like those of epilepsy than anything else —loss of consciousness, convulsion more or less general, choking noises, and the rest—and this equally whether the blood is effused into the substance of the cord or around it; and this fact suggests the possibility, to say the least, that the convulsive or spasmodic symptoms, which have by some writers (on what to me seem to be insufficient grounds) been supposed to distinguish hemorrhage under or above the spinal membranes from hemorrhage into the substance of the cord, may in reality be due to irritation transmitted to the medulla oblongata and upper part of the cord, and not to irritation acting upon the membrane or membranes. Moreover, when the hemorrhage is high up in the cord priapism and distress of breathing are found to figure conspicuously among the symptoms, as they do also in other cases where this part of the cord is damaged by disease or injury. In a few instances, the symptoms of spinal hemorrhage are preceded by symptoms indicative of spinal congestion, or inflammation, or irritation.

Remains of old apoplectic cysts, similar to those so often found in the brain, have been met with in the spinal cord, even in the medulla oblongata and upper part of the cervical region; but these signs of partial recovery are, to say the least, altogether exceptional. Indeed the mischief done by the hemorrhage is generally not only irreparable, but very speedily fatal, and that too in spite of everything that can be done to promote recovery.

XI.—Non-inflammatory Softening.

Two well-marked varieties of softening of the spinal cord are detected by the naked eye—the red and white. In both varieties the microscope brings to light broken-down nerve tissue mixed up with a number of bodies known as *granule masses*—large bodies, whose principal constituent is fat; black looking, from not transmitting light; and somewhat like mulberries, from being built up of a number of round bodies or granules. "It was once thought," said Dr. Wilks, "that these masses denoted inflammation. But you find them in any degenerating part, as a decaying strumous gland, or a cancerous tumour, or a phthisical lung: and the question of their formation in the brain or cord is not yet answered; whether they originate in inflammatory cells, or are the natural cells of the nerve structure degenerated. In some you may still see a wall and a nucleus, which points to the former opinion as the more correct." The red variety of softening is often in parts yellow rather than red: the redness being due to increased vascularity or effused blood corpuscles, one or both; the yellowness to the presence of fibrillated tissue, nucleated fibre, pus corpuscles, or some other form of distinctly inflammatory product. In a word, there can be no doubt of the inflammatory origin of the red variety of softening. In the white variety of softening, on the other hand, there are generally an atheromatous state of the vessels and other signs of true degeneration, the vascularity is evidently diminished, and there is an absence of those distinctly inflammatory products which have just been enumerated. It would seem, indeed, that the white variety of softening differs essentially from the red, in that, instead of being the result of inflammation, it is brought about by the parts being starved and atrophied for want of blood. With respect to the reality of these differences between these two varieties of softening there appears to be little or no reason for doubt: at the same time it must not be forgotten that it is not always easy to draw the line between these two varieties, and that they both may exist together in the same cord..

The symptoms of non-inflammatory softening would seem to be identical with those of the more chronic forms of myelitis. The more tardy the development of these symptoms, and the older the patient in years or in constitution, the more likely is the case to be one of non-inflammatory softening: and this is all that can be said in the matter of diagnosis. Practically, however, this want of definiteness is of no moment; for in the chronic form of myelitis the degenerative process has more to do in bringing about the diseased changes in the cord than the inflammatory, and more to do also in supplying the indications for treatment. Nay, it may even be held that the same remark applies to some extent to the more acute forms of myelitis as well as to the more chronic, for it is with the ruin rapidly produced by the inflammation rather than with the inflammation itself that the practitioner in medicine has to cope almost, if not altogether, from the very onset of the disease.

XII.—INDURATION.

Like the opposite condition of softening, induration (sclerosis) of the spinal cord is one of the consequences of myelitis, chronic or acute; of the chronic form more especially. Induration of the cord is generally associated with atrophy—atrophy often more marked in the white matter than in the gray—and with a condition so curiously bloodless that a section is not unlike that of white of egg boiled hard. In its highest degree the cord may have a leather-like or fibro-cartilaginous hardness and consistency. Induration is a much less common change than softening: it has no symptoms by which it can be distinguished from softening: and it is often met with when it was not expected, and under very different circumstances, as after acute myelitis on the one hand, or after long-standing epileptic disease on the other.

XIII.—ATROPHY AND HYPERTROPHY.

Atrophy of the spinal cord, like atrophy of the brain, is one of the changes which must be looked upon as natural to old age. In elderly persons, indeed, the cord becomes shorter and narrower and firmer, the spinal fluid increases in quantity, so as to fill the space left vacant by the shrunken cord, and the spinal nerves are sensibly wasted at both their roots. All this has been abundantly proved by Chaussard, Ollivier, and others. Atrophy, more or less general, is also associated with many forms of paralysis in which the cord has been long left in a state of comparative functional inactivity; and local atrophy is one of the consequences of tumour, displaced vertebræ, or anything which exercises pressure upon the cord. Of partial forms of atrophy resulting from disease, the only one about which there is any certain knowledge is that which is associated with the disease called locomotor ataxy—namely, atrophy of the posterior columns; and about this form enough has already been said in a separate article.

In a few instances the spinal cord has been found to be so much enlarged, apparently by a true hypertrophy of its natural tissues, as to occupy the whole space of the vertebral canal; but most generally what seems to be hypertrophy at first sight is due, chiefly at least, to congestive swelling and œdema. True hypertrophy has been met with in the fœtus: it occurs mostly in children: and it presents, so far as is known, no symptoms by which it can be recognized. Hypertrophy of the brain is a very uncommon affection, but it is common as compared with hypertrophy of the spinal cord.

XIV.—TUMOUR, &c.

"Tubercle and cancer," says Rokitansky, "are frequent in the brain, unfrequent in the spinal cord. Tubercle I have observed only in combination with other advanced tuberculoses. Its principal seat is the cervical or lumbar portion of the cord, where it sometimes occupies the white fibres, sometimes the gray substance. As in the brain, it leads to inflammation (red softening) and to yellow softening. I have never seen a tuberculous cavity in the cord. Sometimes several tubercles are grouped together, none exceeding the size of millet or hempseed; at other times only one exists, which is of large dimensions, equalling a pea or a bean. Exclusively of several cases of circumscribed callous induration of the white columns, as to the cancerous nature of which I am still in doubt, I have met with but one case of cancer of the cord. It was a solitary nodule of medullary cancer. Ollivier mentions several examples of diffused carcinomatous growths, as well as of the so-called colloid cancer. Among the entozoa I have repeatedly seen the cysticercus in the cervical portion of the spinal marrow. The acephalocyst sacs, as far as has been observed, have no connection with the cord; their nidus is even outside the dura mater. In one case the cyst forced its way into the cavity of the arachnoid."

Nor are exostoses, cartilaginous growths, or aneurisms frequently met with in positions which can exercise pressure upon the spinal cord. Cartilaginous growths, or rather bony plates, it is true, are not unfrequently met with in the visceral arachnoid of the cord—a condition which appears to be rarely met with in the brain; but these growths or plates can scarcely be brought under the head of tumours. Except, perhaps, in connection with scrofulous disease of the vertebræ, the pia mater of the cord is not the seat of tuberculous deposits; and here again is another point of difference between the pathological history of the spinal cord and the brain, for it is a well-known fact that the pia mater of the brain is a favourite seat of these deposits.

The symptoms produced by tumour vary greatly. Neuralgic pain in the back, over the seat of the tumour, appears to be an almost constant symptom. "Pain," says Dr. Reynolds, "is more marked in cases of carcinoma than of tubercle." If a particular nerve be irritated by the tumour, there may be pain, tingling, or some other anomalous sensation in the part or parts supplied by its sentient fibres, or some morbid form of contraction in the muscles supplied by its motor fibres. If a particular nerve be pressed upon more decidedly by the tumour, there may be local anæsthesia, or paralysis instead of morbid sensations or muscular contractions. It is but seldom, however, that these symptoms of irritation or pressure are so strictly localized; and in fact, the presence of the tumour is made known usually only by more general symptoms of irritation, or compression, or inflammation, which, instead of being in any way pathognomonic of tumour, may arise from many other causes. "There is, indeed," as Dr. Gull says, "no symptom, or single group of symptoms, which, taken alone, can serve as a secure basis for diagnosis." Tuberculous or carcinomatous deposits elsewhere, with signs of the peculiar dyscrasia of tubercle or cancer, aneurism elsewhere, nodes elsewhere, may help to a diagnosis by showing that symptoms which appear to point to a tumour may have such a cause, and at the same time may supply some information as to the special character of the tumour; but this possibility of help in diagnosis is too remote to be of much practical value, if any. It may be supposed that any scrofulous deposit in the cord is more likely to occur in children, and any cancerous growth in older persons; but even this rule has too many exceptions to make it of much use.

XV.—Concussion.

Concussion of the spinal cord, like concussion of the brain, is the result of a fall from a height, a blow on the back, or some other accident, and its symptoms vary with the intensity of the shock. Sudden paralysis and loss of sensation, more or less complete, with some inability to pass water or to prevent the escape of flatus or feces, are the more special symptoms. Sudden and marked failure in the circulation and respiration, as shown by pallor, feebleness of the pulse, diminished temperature, slow and shallow breathing, and other signs of common shock are also associated with the more especial symptoms. Great pain along the spine or in some part of the spine has been considered as one of the symptoms of spinal concussion; but neither pain nor spasm are met with in the cases which I have examined; and Dr. Reynolds comes to the same conclusion, for, speaking of these cases, he says: "There is in them neither marked pain nor spasm." Indeed, in the majority of cases the patient is obviously rendered incapable of experiencing either pain or spasm by being *stunned.*

The symptoms of spinal concussion not unfrequently issue in those of spinal congestion, or myelitis, or spinal meningitis, or else death without any signs of reaction may be the result. Often, without passing into any definite disease, the cord, even after what might at first seem to be only a slight degree of concussion, may not recover its former power perfectly, the patient ever afterwards being weak in many respects, especially in his legs and bladder. Indeed, concussion of the spine sufficiently severe to produce at the time any marked degree of paralysis in the limbs and bladder and lower bowel, with loss of sensation, is certainly a very grave matter, and it may be questioned whether in such a case recovery is ever more than partial.

The appearances after death may present nothing unnatural, or they may be those of hemorrhage more or less extensive. It is very possible that the cases in which severe pain in the back was a symptom would prove, if *all* the *facts* were fully known, to be cases in which the symptoms of concussion were mixed up with those of hemorrhage: at any rate, there was hemorrhage in one case of spinal concussion in which pain in the spine was a conspicuous symptom, which case came under my notice not long ago. In fatal cases, in which the reaction after the concussion has issued in inflammatory and other changes in the cord, these changes will be met with after death; and if fracture or dislocation of the vertebræ was produced at the time of the concussion, the evidence of such injury will of course not be wanting.

XVI.—Compression.

When the spinal cord is compressed by a dislocated or fractured vertebra, by a tumour, by a bullet or in any other way, the symptoms will of course vary with the seat and degree of compression. The symptoms will, in fact, be as variable—for they will be the same—as those which are produced by experimental division of the parts compressed, and about which more than is convenient had to be said in the preliminary remarks. All, therefore, that is necessary here is to refer to those preliminary remarks for the information which may help to make the symptoms of compression intelligible, and, in passing, to express a hope that trephining or other operative procedures which have been recommended and practised in certain cases of spinal compression may not be altogether unjustifiable.

XVII.—Caries of the Vertebral Column.

This disease is usually limited to the bodies of the vertebræ and to the intervertebral substances, but sometimes it extends backwards to the arches and processes of the vertebræ as well. It commences, very generally, in the middle dorsal region, and, as generally, it does not extend beyond this region; but there is no part of the spinal column in which it may not begin, or to which it may not extend; it invariably, when sufficiently advanced, gives rise to "angular curvature," or projection directly backwards, of the diseased part of the spine, this deformity being due to the way in which the thinned and diseased bodies of the vertebræ become crushed in under the weight of the upper part of the body. In the great majority of cases caries of the vertebræ is an unmistakably strumous affection, being neither more nor less than tuberculous infiltration of the bodies of the vertebræ; and the changes in the bone are due to the melting down of this deposit rather than to any strictly inflammatory process.

The earlier symptoms of caries of the vertebræ are not at all well marked. Of these the most conspicuous must be reckoned—weakness in the back, generally in the dorsal region, with aching or pain, more or less severe, in the weak part, causing a disposition to lean forwards and to use the arms as props; some prominence of the spinous processes of the weak and painful part of the spine, with some puffiness of the overlying skin; a feeling of undue heat, or even burning, in the weak and painful and prominent part, which is not felt in other parts of the spine, when a sponge soaked in moderately warm water is passed down the spine; and a state of tenderness on pressure or percussion, which is equally restricted to the same weak and painful and prominent part. Afterwards, when the disease is more advanced, there are more marked symptoms, namely, these: unmistakable "angular curvature," the formation of abscess, slight hectic in the evening, a feeling of constriction around the waist, it may be, and still later, more or less paralysis of the legs, more or less loss of control over the bladder and bowel, and other symptoms indicative of secondary myelitis or spinal meningitis. Abscess may be one of the earlier symptoms preceding any obvious deformity, or it may not occur at all. In fact, abscess appears to be a symptom of strumous disease of the vertebræ exclusively, and not of the non-strumous variety of caries. When it does occur, which is certainly in the great majority of cases, there is usually some diminution of pain and other evidences of irritation. When it does occur, as is well known, it generally makes its appearance at a distance from the diseased vertebræ, most commonly as "psoas abscess" in the groins, but by no means exclusively in this form and locality. It is seldom that the spinal cord becomes *compressed* by the giving way of the bodies of the vertebræ in the progress of the disease; but sooner or later it almost constantly happens that the cord or its membranes opposite the diseased vertebræ become the seat of inflammatory changes, which changes, rather than the drain from an abscess, are indeed the reason why, in so many cases, sooner or later, caries of the vertebræ proves to be destructive to life.

The diagnosis between "angular curvature" from caries of the spine, and the curvatures forward, backward, and sideways, without other structural changes in the vertebral column than those of simple adaptation to the altered position, is not very difficult. These latter curvatures, in fact, want all the special and grave features which have been indicated as characterizing the former. Nor yet is the diagnosis difficult between "angular curvature" in its earliest stage and spinal irritation, with which it is sure to be associated, and with which there is certainly no small danger of its being confounded. This topic has been already touched upon when speaking of spinal irritation, and here it is enough to say that the occurrence of the symptoms which are present in the beginning of caries of the vertebræ (which are no other than those which may belong to simple spinal irritation), in children or youths of a manifestly scrofulous habit—at an age, that is to say, and in a habit, in which the symptoms of simple spinal irritation are not likely to be met with—are sufficient to do more than create a bald suspicion of the existence of disease of the vertebral column.

The prognosis of caries of vertebræ is always bad enough. A humpback is the best result to be hoped for. The end to be aimed at in treatment is, of course, to promote anchylosis of the diseased bones of the vertebræ by allowing them to fall together—by favouring, that is to say, the deformity which is inevitable by letting the back bend and not by trying to prevent it by keeping the back straight—and to keep up the strength in every way. But these are matters which I cannot touch upon without trespassing upon the domains of surgery, and I therefore leave them to those who are better able, and whose right it is to deal with them.

XVIII.—SPINA BIFIDA, &c.

The commonest congenital affection to which the spinal cord is liable is dropsy, or hydrorachis, and of this dropsy *spina bifida* is the variety most frequently met with, and of most practical interest. The spine is bifid in this disorder from the non-development or separation of the spinal processes and laminæ, and the consequence of this malformation is that an opening is left through which, very often, the dropsical fluid presses outwards, and distends in so doing the integuments and subjacent tissues into an hernial tumour. Very generally congenital hydrocephalus is associated with congenital hydrorachis. The fluid in hydrorachis is precisely of the same constitution and character as that which is met with in hydrocephalus: it varies in quantity from a few ounces to several pints: it accumulates between the arachnoid and pia mater, in the arachnoid sac, in the central canal of the cord, and even outside the dura mater, sometimes in one place, sometimes in another, sometimes in more places than one. The hernial tumour into which this dropsical fluid bulges outwardly varies greatly both in position and size, and in the condition of its coverings: it is almost invariably met with in the lumbar region, but it may be in any region: it is usually of the size of a walnut or orange, but it may be as large as a child's head, or even larger; it may be single or multiple: its bulk may vary considerably under different circumstances, or not at all, becoming, if it vary, fuller and more tense if the position of the child be made such as to cause the fluid to flow into it, emptier and flaccid if this position be altered so that this fluid may run out of it, or if pressure be made upon it so as to bring about the same result: it may swell during expiration and fall during inspiration: it may present distinct fluctuation or none at all; and the skin over it may be sound, thickened, inflamed, ulcerated, gangrenous, covered with tufts of hair, and so on. The dura mater and its lining of arachnoid membrane always enter into the composition of the coverings of the tumour, and these are the only constant elements in these coverings. In the lumbar region, the cord and its nerves, which are generally rudimentary, are out of the tumour altogether: in the cervical and upper dorsal region, on the contrary, it is no uncommon thing for the cord and its nerves to be adherent to the walls of the tumour.

In spina bifida the lower limbs are generally paralyzed as well as the bladder and lower bowel, and not unfrequently there is, in addition to the spinal deformity, deficiency of the abdominal walls, hernia of the bladder, imperforate anus, &c. But few cases recover, or even improve, death happening generally at an early period either in convulsions or from spinal inflammation, the immediate cause often being the bursting of the tumour: still there are cases on record in which life has been prolonged—and this too with tumours of no small size—not only for a few months, but for 17, 18, 19, 21, and even 50 years.

There is little to be done for the relief of spina bifida. Pressure on the tumour by means of an air-pad and suitable bandages can do no harm; and occasional punctures with a grooved needle, as recommended by Sir Astley Cooper, may be a justifiable measure. Even cures have resulted from a combination of these punctures with pressure. "All the plans of treatment," says Mr. Erichsen, "by which the tumour is opened and air allowed to enter it, are fraught with danger, and will, I believe, inevitably be followed by the death of the child from inflammation of the meninges of the cord and convulsions."

There are several other congenital affections of the cord, of which the best account is still to be found in the classical pages of Ollivier. The cord may be entirely absent (amyélie); or it may be imperfect (atelomyélie). Of the imperfect forms of cord there are several varieties. The upper part may be wanting, as in anencephalous and acephalous monsters. The cord may be bifurcated at one extremity or the other, at the upper extremity in monsters with two heads and one body, at the lower extremity in monsters with one head and two bodies. It may be double. It may vary greatly in dimensions, being larger or smaller, longer or shorter than natural—longer, for example, in monsters with tails, shorter in monsters of a contrary sort. It may, as in one form of hydrorachis, be little more than a long bag in consequence of the distension of the central canal of the cord with the dropsical fluid. Or it may be discoloured, as it is in the state which Ollivier designates *kirronese* or *coloration ictérique.* These malformations or morbid conditions, however, are of theoretical rather than of practical interest: and therefore they do not form fit subjects for further notice in an article like the present, which has solely a practical end in view.

II.

EPIDEMIC CEREBRO-SPINAL MENINGITIS.

By J. Netten Radcliffe.

Definition.—An acute, epidemic disease, characterized by profound disturbance of the central nervous system, indicated, at the outset, chiefly by shivering, intense headache or vertigo, or both, and persistent vomiting: subsequently by delirium, often violent, alternating with somnolence, or a state of apathy or stupor; an acutely painful condition with spasm—sometimes tetanoid—of certain groups of muscles, especially the posterior muscles of the neck, occasioning retraction of the head; and an increased sensitiveness of the surface of the body. Throughout the disease, there is marked depression of the vital powers; not unfrequently collapse: and in its course an eruption of vesicles, petechiæ, or purpuric spots, or mottling of the skin, is apt to occur. If the disease tend to recovery, the symptoms gradually subside without any critical phenomena, and convalescence is protracted; if to a fatal termination, death is almost invariably preceded by coma. After death, the enveloping membranes of the brain and spinal cord are found in a morbid state, of which the most notable signs are engorgement of the bloodvessels, usually excessive, and an effusion of sero-purulent matter into the meshes of the pia mater, and beneath the arachnoid.[1]

Synonyms.—(a) *Technical:*—Cerebro-spinal fever (*Royal College of Physicians*); cerebro-spinal arachnitis; typhus syncopalis; tifo apoplettico tetanico; typhus cerebro-spinal (*Boudin*); cerebral typhus; epidemic meningitis (*Stillé*, U.S); petechial fever (*G. B. Wood*, U.S.); fever with cerebro-spinal meningitis (*S. Gordon*); malignant purpuric fever (*W. Stokes*); malignant purple fever; nervo-purpuric fever (*Mapother*): malignant purpuræ (*McSwinney*): pestilential purpuræ

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[1] Since the completion of this article the Royal College of Physicians, in its "Nomenclature of Disease," has adopted the following designation and definition of this malady: "*Cerebro-spinal Fever.* A malignant epidemic fever, attended by painful contraction of the muscles of the neck, and retraction of the head. In certain epidemics it is frequently accompanied by a profuse purpuric eruption, and occasionally by secondary effusions into certain joints. Lesions of the brain and spinal cord and their membranes are found on dissection."

(*Banks*); febris nigra (*R. D. Lyons*).—(b) *Popular*:—Spotted fever (*New England*); cold plague (*Southern States*, U.S.); Kolik, Nackenstarre, Genickkrampf (*Germany*); Nacksjuka, Dragsjuka (*Sweden*).

Description of the Disease.—1. *General Symptoms:*—Epidemic cerebro-spinal meningitis is observed in three principal forms: (A.—*Simple*), in which the symptoms indicative of disorder of the nervous centres predominate throughout the whole course of the disease; (B.—*Fulminant*), in which the depressed state of the vital powers, with profound blood change—as shown by hemorrhage of various forms into the cutis—characterize the disease; and (C.—*Purpuric*) in which the cerebro-spinal symptoms and the symptoms which mark blood-change (*petechiæ, purpuræ, vibices*, &c.), and flagging of the vital powers, occur together. The proportion in which the three forms of the disease are manifested varies considerably in different epidemics. In every outbreak cases are observed which link, by insensible gradations, one form with another; while in other, and rarer cases, the characteristic symptoms of the three forms are merged together. Continental and American writers have described an *abortive* form of the disease, the term being given (a) to certain anomalous symptoms observed in communities among which the disease is active: and (b) to sundry characteristic symptoms of the malady of transitory duration: such as severe cephalalgia: a sense of dragging at the back of the neck, or actual slight retraction of the head; cardialgia, enteralgia;—these symptoms often ending contemporaneously with the appearance of profuse perspiration, or epistaxis.

(A) *Simple Epidemic Cerebro-spinal Meningitis.*—In the majority of the cases before the onset of the disease the patient suffers from more or less indisposition. There are discomfort in the head, neuralgic pains in the back, the principal groups of muscles, and the abdomen; failure of the appetite, indifference to exertion, perhaps also slight shiverings, and a quasi-febrile state. These indications of disordered innervation may persist from three to seven days, or be manifested only during a few hours, before the confirmed malady fully declares itself. But in numerous cases the onset of the disease is sudden and characteristic. In both classes of cases the accession of the malady is declared by similar well-marked signs. Acute shivering is followed or accompanied by severe, commonly intolerable, headache or vertigo, or both; and after a short interval, or contemporaneously, profuse and irrepressible vomiting takes place, rarely preceded by nausea. Or vomiting may be the initiatory symptom, the shivering, headache, or vertigo following quickly after. The intensity of the symptoms marking the onset of the disease is remarkable and characteristic. The sickness is often, and from the outset accompanied by severe abdominal pain, apparently neuralgic; and not unfrequently this pain precedes the disorder of the stomach, as the cephalalgia precedes mental confusion. In like manner, the shivering ushers in, or is accompanied by, an acutely painful state of the muscles, more or less general, the forerunner of spasm. Cephalalgia and delirium, abdominal neuralgia and vomiting, and myalgia and spasm are the principal morbid factors of simple epidemic cerebro-spinal meningitis. They distinguish the malady, and the varying prominence with which they are met in different outbreaks gives rise to many diversities in the grouping of symptoms during the progress of the disease. The onward course of the disorder is usually rapid. The headache continues, often without a lull; vertigo occurs frequently; and after the lapse of a very brief period, measured usually by a few hours, the mind becomes confused, and, in some cases, a state of restlessness supervenes not unlike that observed in delirium tremens. The mental confusion assumes the form of muttering delirium, with periods of somnolence, often interrupted by cries provoked by the intense cephalalgia, or by the neuralgic pain elsewhere; or the patient falls into a state of apathy or stupor, from which he may be partially roused, but into which he relapses when left undisturbed, the mind acting as in a dream; or there is acute and violent delirium. Contemporaneously with, or immediately prior to, the mental disturbance, the painful state of the muscles increases, certain groups being more manifestly affected than others, especially the posterior muscles of the neck, the muscles of the spinal column, and those of the lower extremities. The pain often of an acutely neuralgic character, shoots along the spine and limbs, and across the walls of the abdomen. Partly as a voluntary action, partly as a consequence of spasm of the painful muscles, the head is drawn backwards. The retraction thus arising is one of the commonest and most characteristic symptoms of the disease. As the malady advances an actual or apparent tetanoid contraction of other groups of muscles may occur, the trunk most frequently being curved backwards, and the legs bent upon the thighs. At the same time there may be fleeting spasmodic actions of some of the muscles of the face, and occasionally of the eyeballs; or in some cases tonic contraction of these muscles, giving rise to the so-called sardonic laugh, or to persistent strabismus. In many cases cutaneous sensibility is much exaggerated, and very frequently a vesicular or roseolar eruption is developed, the former particularly about the lips. The aspect of the patient as the disease advances is dependent upon the degree of pain, the state of delirium or stupor, and extent of spasm which may be present. The countenance is rigid and contracted, the expression of face betokening acute pain; or it is dominated by the delirious fancies; or reflects the mental torpidity; or is distorted by spasm. There is frequently a slight effusion of the eyes, altogether different from the dusky appearance of typhus; and the face is commonly pale and sunken, seldom and only transitorily flushed and swollen, except when affected more or less extensively by the vesicular eruption. The surface sometimes moist, sometimes dry, rarely gives to the hand a sensation of febrile heat, although the temperature of the body ranges above the normal standard. The pulse from the outset is wanting in firmness, and the indications of defective tone increase as the disease advances. The respiration exhibits no marked disturbance, excepting an increase of rapidity witnessed during accessions of pain and restlessness, and in the advanced stage of the malady the diminution dependent upon failing circulation and innervation. The alimentary canal, apart from the vomiting, which usually ceases as the disease becomes fully developed, presents little indication of disturbance. The tongue is as frequently clean and moist as dry, foul, and discoloured; and the bowels may be either costive or loose, the former, perhaps, more commonly than the latter. In some outbreaks, indeed, costiveness has been marked and almost general, but in others diarrhœa has been prevalent. The renal secretion is rarely much disturbed.

As the malady proceeds, if it tends towards a fatal termination, the spasmodic symptoms increase, the patient becomes comatose, and death may occur either from asphyxia or exhaustion in from ten or twelve hours to seven or eight days. If the disease is prolonged beyond this period, various secondary lesions are apt to occur, especially certain inflammatory states of the eyes and ears, the mischief in the former organs being shown by ulceration of the cornea, iritis, and sometimes suppuration of the globe; in the latter by less obvious structural changes during life except as indicated by deafness. Or there may be paralysis affecting one half of the body, or one side of the face, or one of the limbs, or an isolated group of muscles. Or there may be an inflammatory state, with sero-purulent effusion into one or more of the large joints. Or, finally, the patient may fall into a state of marasmus and nervous exhaustion, often protracted and not rarely fatal. If the malady proceed to a favourable termination without any of these sequences, health may be recovered in from three to four weeks. If the progress of the disorder, otherwise favourable, is interrupted by one or other complication, the period of recovery is uncertain and often long postponed.

(B) *Fulminant Epidemic Cerebro-spinal Meningitis.*—In the siderant form of the malady the onset is without premonition. The patient suddenly falls into a state of collapse. The surface of the body has often a cyanotic aspect, and is cold and clammy to the touch, or covered with a profuse perspiration, the face being not rarely shrunk and livid, and the eyes deep sunk as in the algide stage of cholera. There may be some shivering at intervals, more or less pain of the head, and occasional vomiting, sometimes of a grumous black or coffee-coloured fluid. Drowsiness, if not present at the outset, rapidly supervenes, followed by or concurrently with delirium. Coma, rarely other than the precursor of death, quickly succeeds. In the mean time, purpuric spots show themselves over the surface of the body generally, red or purple and circumscribed in the beginning, but rapidly becoming black, and often extending their margins so as to form irregular inky blotches, or streaks, or great patches; and not unfrequently several of the spots become gangrenous. Sometimes the purpuric spots appear contemporaneously with the collapse at the outset of the attack. The respiration is preternaturally slow, and the pulse (if it has not been absent at the wrist from the beginning) falls with the progress of the disease. The urine is loaded with albumen. Life may be extinguished in less than *five hours*, or it may be prolonged for two or three days. Recovery from this form of epidemic cerebro-spinal meningitis is not unknown, but it is an exceedingly rare event.

(C) *Purpuric Epidemic Cerebro-spinal Meningitis.*—In the purpuric form of epidemic cerebro-spinal meningitis, the symptoms which distinguish the simple and fulminant forms of the disease occur combined together in various proportions, some cases approximating more or less closely to the latter, others, as is most common, to the former variety of the affection. Thus concurrently with shivering, intense headache, vomiting, rachialgia and retraction of the head, there may be depression of the vital powers approaching collapse, or collapse itself, with the development of petechiæ, purpuræ, vibices, ecchymoses, hemorrhage, from the mucous tracts, delirium, coma, and rapid dissolution. In by far the greater number of cases, however, the disease follows the course of simple epidemic cerebro-spinal meningitis; but within twenty-four hours, or from this period to the fourth day, or still later in the progress of the malady, petechiæ or purpuræ are developed more or less copiously, and occasionally hemorrhage occurs from the mucous tracts. This phase of epidemic cerebro-spinal meningitis does not appear to be more fatal than the simple form of the disease. It has been observed more commonly in the United States than on the continent of Europe, and it was the principal variety which occurred during the recent outbreak in Ireland.

SPECIAL SYMPTOMS.—1. *The Nervous System.*—Headache is almost constant, and it is remarkable for its early and persistent severity. At the outset it is not localized in any particular part of the head. It may be referred to the forehead, the sides, the vertex, or the occiput; or it may be general. Later in the disease, the occiput is, perhaps, most commonly the seat of pain. The intensity of the headache is, as a rule, peculiar. The patients describe the pain as sharp, lancinating, stabbing, plunging, tensive, throbbing, boring, or crushing. It is so intolerable as to elicit groans and cries from the sufferer; often even during delirium or stupor, the exclamations, the contraction of the forehead, and the manner in which the hands are moved towards the head, show that the pain continues. In young children this state closely resembles that which is so significant of tubercular meningitis. The headache may cease when the disease has become fully developed, or, as is probably more common, it may persist throughout the whole course of the malady so long as consciousness remains. Occasionally, indeed, when recovery takes place, it will continue far into the period of convalescence.

Rachialgia is rarely absent. It is sometimes general throughout the spinal region, but more frequently it is limited to the loins, the dorsal region, or, as is most usual, to the posterior part of the neck. Occasionally the pain radiates from the neck to the extremities and walls of the abdominal and thoracic cavities. In rare cases the pain has commenced at some point of the peripheral nervous system, and spread thence to the back, occurring in paroxysms. This pain has the same character as the cephalalgia, and the words (intolerable, atrocious, tensive, &c.) used to indicate the nature of the latter may be employed also to describe the former. It is augmented by movements, and its chief seat is in the muscles of the spinal column.

The nuchal pain and its consequences constitute one of the most characteristic signs of the disease. Frequently at the outset of the malady, this pain is preceded by a dragging sensation at the back of the head. As the pain increases in intensity, the head is voluntarily thrown back to relieve all strain upon the exquisitely sensitive muscles. Or, in conjunction with the pain, spasm of the affected muscles occurs, and the head is forcibly drawn backwards. Among the popular terms of the disease, those arising from this symptom (Nackenstarre, Genickkrampf, Nacksjuka, &c.) are very prominent. When the rachialgia is more diffused, and the pain extends also to the limbs, adapted or spasmodic contractions of the trunk and lower extremities are apt to occur. Rachialgia is not present in the siderant and in severe cases of the purpuric forms of the affection. It is noteworthy that pressure on the spinous processes, during the most acute rachialgia, rarely causes pain.

Enteralgia and other Neuralgic Pains.—Abdominal pain, neuralgic in character, and more or less closely linked to the pain in the course of the spine, is not unfrequent, and it is often closely associated with uncontrollable vomiting. In some epidemics, as in that of 1865 on the Lower Vistula, enteralgia was so common among children seized with cerebro-spinal meningitis that it gave rise to the trivial designation "belly-ache," as one of the popular names of the disease. Neuralgic pains in the limbs, referred to in connection with rachialgia, are less common than like pains along the course of the spine and in the abdomen.

Increased Sensitiveness of the Surface of the Body has been described as frequent in several outbreaks. During the recent epidemic in the United States, cutaneous hyperæsthesia is said to have been a characteristic symptom of the disease in its fully developed state. During the outbreak on the Lower Vistula, an increase of cutaneous sensitiveness was also observed very commonly, but it was not regarded by Dr. Burdon Sanderson as a characteristic symptom, but "a mere consequence or interlude of pain:" being, in fact, an excessive tenderness experienced during intermissions, or after the cessation of pain.

Spasm.—Sufficient care has not always been taken to discriminate between apparent and actual spasm in this disease. Tourdes, in 1843, showed that the retraction of the head and curvature of the spine did not in all cases arise from a spasmodic contraction of the muscles, but that the position was not rarely voluntarily or instinctively assumed by the patient as most conducive to relief of the spinal pain. Dr. Burdon Sanderson confirmed this observation of Tourdes, so far as retraction of the head was concerned, in 1865. In the cases observed by him, in which the head was apparently drawn backwards, it was practicable to extend the seemingly contracted muscles, although the effort gave rise to exquisite pain and instinctive resistance. There was not any tension of the muscles except such as arose from this resistance; no tightness was felt so long as they were at rest. "It was not till the neck was completely extended that the muscles became hard, and even then the hardness was not for a moment comparable to that which is felt in tetanus." The position in bed of the patients observed by Burdon Sanderson was that which would produce the greatest relaxation of painful groups of muscles. There can be no doubt however, that spasm is a frequent accompaniment of epidemic cerebro-spinal meningitis. In the clonic form it is witnessed in some cases as transitory contractions of the facial muscles, cramps of the extremities, the convulsive agitation and trembling referred to in the general description as somewhat like what is observed in delirium tremens, very rarely in local convulsion of a single limb, and still more rarely in general convulsion. Tonic spasm of the muscles of the face, jaws (trismus), and gullet, and of the limbs and trunk, may also occur, giving rise to true opisthotonos, emprosthotonos, or general tetanic rigidity of the trunk and limbs.

Paralysis is not of very common occurrence during the progress of epidemic cerebro-spinal meningitis. Hemiplegia has been occasionally noticed, and paralysis more or less complete of one or both extremities, upper and lower, of the muscles of deglutition, of articulation, and of certain other associated groups, the latter chiefly towards the close of the malady. The general paralysis noticed by some writers was usually significant, and, indeed, a part of the phenomena of approaching dissolution.

The *special senses* do not often manifest much change, except as a consequence of certain structural lesions. Increased, sometimes exquisite, sensitiveness of sight and hearing has occasionally been noticed, concurrently with augmented sensitiveness to other external impressions, especially towards the close of the malady, when complete consciousness returns. Amaurosis has also occurred, without apparent change in the ocular apparatus. It may be noted, moreover, of the eye and sight, that occasionally there is strabismus and double-vision. The pupils may be normal in aspect and action, or they may present various changes. They may be dilated or contracted, or one dilated and the other contracted, or they may exhibit curious alternations of contraction and dilatation under the influence of the same degree of light. Both the *eyes* and the *ears* are liable to undergo certain structural lesions. These consist in well-marked inflammatory changes, commencing sometimes in the cornea, sometimes in the deeper tissues. Most commonly keratitis is set up, ending in opacity or ulceration; and if the latter, the iris may become involved. Or, iritis may occur independently, with effusion of lymph or pus, and the consequences thereof (synechia posterior and distortion of the iris are particularly noted). Of more deeply-seated changes may be mentioned opacity of the lens or of the vitreous humour, separation of the retina from the choroid, purulent infiltration, or atrophy of the eyeball. The ear suffers, perhaps, more frequently than the eye. Deafness is probably more common than defects of vision, and it is largely dependent upon inflammatory changes set up in the organ, and particularly affecting the lining membrane of the vestibule and semicircular canals. Occasionally, the external meatus has been affected, and a profuse purulent discharge flowed from it. These lesions of the organs of sight and hearing may occur either early or late in the course of the disease. The sense of *smell* very rarely suffers. Its loss in one nostril has been recorded in a single case, and this, perhaps, dependent upon inflammatory changes in the lining membrane of the nose, as purulent discharge from the nostrils has occasionally taken place.

Vertigo is sometimes observed as an initial symptom of the disease in conjunction with the cephalalgia. Instances are recorded in which the first accession of the disease was marked by severe giddiness, during which the patient either staggered about like a drunken man, or turned round several times, and then fell.

Delirium is rarely absent. It varies much in character, and may occur at any period of the seizure. It may be quiet or violent, transitory or more or less persistent. It sometimes, but rarely, forms one of the symptoms of invasion, when its access is sudden and its character acute. It may supervene with violence after the malady has continued several hours or two or three days. In the acute form of delirium, the patient is very noisy, and often so violent as to require restraint. Sometimes it happens that paroxysms of furious excitement occur with intervals of placid delirium. Hence the necessity of great watchfulness in the care of these cases. Most commonly the delirium follows closely upon the initiatory symptoms, and is aggravated as the disease advances. At the beginning, the confusion of thought may not be so great but that the patient can be roused so as to answer questions intelligibly. Later, the incoherence becomes much greater, and is usually accompanied with considerable agitation. Much difference is observed, not only in the degree of impairment of the consciousness, but also in the periods of manifestation of the impairment. In some cases, the delirium occurs chiefly during the night; in others, and very commonly, it alternates with periods of somnolence or of quietude. In the more persistent cases there are usually exacerbations. If the disease tend to a fatal ending, the delirium is followed by coma; if to recovery, consciousness is, as a rule, gradually recovered: but, at times, a period of stupor intervenes between the subsidence of the delirium and returning perception. In the slightest cases of the malady the delirium may be transient only, taking place at intervals chiefly during the night. In the gravest cases, when death occurs in a few hours, delirium is most commonly present. The duration of the delirium depends entirely upon the nature and duration of the case. Instances are recorded in which furious delirium has occurred for three nights in succession. In other instances a delirious state has persisted more or less continuously for fifteen days.

Stupor and Coma.—In not a few protracted cases, delirium is followed by a prolonged state of stupor, the patient lying completely indifferent to external impressions. In six cases observed by Dr. Burdon Sanderson, in which there had been violent delirium at the outset, this state lasted from one week to five weeks, the mean duration of the several cases being nineteen days. The observer remarks, however, that as four of the cases "emerged from their stupor in a state of complete deafness, there was much difficulty in limiting accurately the period of unconsciousness." Sometimes the state of stupor supervenes without the intervention of violent delirium. *Coma* occurs in nearly all fatal cases, and is, indeed, generally the forerunner of death.

2. *The Digestive System.*—The uncontrollable *vomiting*, which is one of the characteristic initiatory symptoms of the disorder, is an effect of the cerebral mischief. Most frequent at the beginning of the malady, the vomiting diminishes as the disease advances, occasionally increasing, during exacerbations. The matter evacuated, after the stomach has been emptied of food, is usually of a greenish or yellowish colour and bitter taste, and is composed largely of bile; more rarely it is viscid and white. Occasionally, in the fulminant and purpuric forms of the malady, a grumous black or coffee coloured fluid is vomited. In several outbreaks, the vomiting of large quantities of *Ascarides lumbricoides* has been specially noted. The *buccal cavity* and *tongue* do not exhibit any particular signs, except in those rare cases in which there is hemorrhage from the gums. As a rule, the tongue is clean and natural at the outset, and its subsequent state depends upon the degree of febrile excitement which may be set up, or the development of a typhous state, when it may become foul with various well-known aspects, or dry and black sordes accumulating on the teeth. From the beginning of the attack the appetite for food is destroyed, whatever the state of the buccal cavity; and sometimes there is much, at others insatiable thirst. The *bowels* are more commonly costive than the reverse. In some outbreaks costiveness has been of general occurrence. Diarrhœa, late in the disease, is not unfrequently to be attributed to the previous administration of purgatives, and involuntary stools are usually one of the accompaniments of complete nervous and vital prostration.

3. *The Urinary System.*—In the simple form of epidemic cerebro-spinal meningitis the urine does not exhibit any marked change. It may be more abundant, and slight deposits of lithic acid may occur. In the fulminant, and severe cases of the purpuric forms, it commonly (in the first-named form perhaps invariably) contains albumen, sometimes in large amount, and occasionally cylindrical casts and blood-corpuscles. Retention or incontinence of urine has occurred in the progress of the disease.

4. *The Respiratory System.*—In all the graver cases the respiration is more or less altered. It is sighing, laboured, or interrupted. Dr. Burdon Sanderson writes of the outbreak on the Lower Vistula: "In all severe cases, whether of children or adults, the breathing was embarrassed in proportion to the general gravity of the symptoms. This embarrassment was marked by a slow, laboured inspiration, followed by quick respiration and a long pause, that condition of breathing which is so frequently observed in continued fever (especially typhoid), and is often called suspirious. In all the fatal cases which came under my notice, the most prominent symptoms which preceded death were those which indicate impairment and perversion of the respiratory function. As the breathing became more hurried and difficult, the general depression became more intense, the pulse became weaker and quicker, and the temperature of the skin more elevated." Dr. S. Gordon records a case, fatal in less than five hours, in which the respirations rapidly fell to nine per minute, the pulse at the time being 120.

5. *The Circulatory System.*—The cardinal point with respect to the circulation, as indicated by the radial *pulse*, is defect of arterial tension. This has been common to all epidemics, with hardly an exception; and the exceptional instances have probably been more apparent than real. The frequency of the pulse does not admit of general statement. It has a wide range. In the epidemic on the Lower Vistula, the pulse in six adult cases observed by Dr. Burdon Sanderson varied from 56 to 98, the average beats being 85. In several cases noted by the same observer "its frequency varied considerably from day to day, without apparent relation to the condition of the patient in other respects." During the Philadelphia outbreak of 1866, in 98 cases observed by Dr. W. H. H. Githens, the pulse varied from the normal beat to 150 per minute in uncomplicated cases, and reached as high as 160 in two cases, in puerperal women. "It was in all very weak, with a dichrotic tendency, sometimes entirely imperceptible in the radial artery, and always interrupted by slight pressure."

6. *The Cutaneous System.*—In respect of dryness or moisture or feeling to the touch, the *skin* presents no constant condition; but in numerous cases it is the seat of various forms of eruption of remarkable interest. The extent of prevalence or predominance of one or other of these different forms of eruption has varied considerably in the numerous recorded outbreaks. In the epidemics which have occurred in the United States, *petechiæ* have been so common as to have given rise to the popular name of the disease (*spotted fever*), and to have induced Dr. G. B. Wood, Professor of the Theory and Practice of Medicine in the University of Pennsylvania, to adopt as the technical designation of the disease the term *petechial fever*. During the recent outbreak in Ireland (1866–67), *purpura* was the predominant form of eruption, and Professor Stokes proposed to designate the malady *malignant purpuric fever;* other observers also suggesting terms founded upon this character. In the outbreak on the Lower Vistula (1865), an herpetic eruption was most common. In all the greater outbreaks, each form of eruption mentioned in the definition of the disease has been observed; but the proportion of cases in which one or other form of eruption has prevailed has varied greatly in each outbreak. In some of the earlier outbreaks in the United States few cases occurred in which a petechial eruption was not noted. Of 98 cases admitted into the Philadelphia Hospital (Blockley) in 1866, 36 had petechiæ; 13 mixed petechiæ and erythema; 9 erythema and urticaria; 3 indistinct petechial mottling, and 37 no eruption at all (GITHENS). In the outbreak on the Lower Vistula the proportion of cases exhibiting an eruption was comparatively small; in the recent outbreak in Ireland, large. The forms of eruption observed are as follows: (*a*) *Vesicles.* A vesicular eruption (*eczema*, HIRSCH), sometimes herpetic in character, chiefly appearing in the vicinity of the lips, but occasionally extending over the sides of the face, diffused more or less on the trunk, or showing itself in patches on the limbs. This symptom has occasionally taken the form of shingles. It is most commonly noticed in the simple form of the disease, but it may take place in either of the other forms, and when associated with purpura,

the vesicles may be flattened and rest upon a livid base, presenting a horrible aspect. This form of eruption may appear as early as the second day. (*b*) *Purpura.* 1. True *petechiæ.* 2. *Purpuric spots*, varying in size from a split pea to half-a-crown, with more or less extensive effusions of blood, or of its colouring matter, into the cutis (*vibices, ecchymoses*). The spots have sometimes a regular, sometimes an irregular, even a ragged, outline. Their size may remain fixed from the time of their first appearance, or it may increase largely and rapidly. They may be of a light or dark red colour at the outset, subsequently becoming purple and black; or, as is most common, they may from the beginning be dark purple or black, their blackness being often fittingly likened to that of ink—the eruption resembling "spots" or "splashes" of that fluid. They may appear on the trunk or limbs only, or they may be scattered copiously over the whole surface of the body, including the face. The purpuric spots are frequently hard to the touch, the margin being defined, and giving the impression to the fingers of being raised above the surface: sometimes a vesicle forms above several of the spots, and gangrene of the adjacent tissue takes place. Dr. S. Gordon writes of the recent epidemic in Ireland: "Many cases are accompanied by a distinct eruption, which comes out with great rapidity; is found over all parts of the body, but chiefly on the lower extremities; is of a very dark colour, sometimes very deep brown, or purple, or even black. The spots are of various sizes and shapes, some small and round, others large and irregular; some appear like large spots of very black purpura, only more mottled and more irregular in colour and shape; others are more confined, and raised above the level of the skin, consisting in effusion into its substance: many patients die in this stage, but in some the disease progresses, and these spots are absorbed, leaving a yellowish mark under the cuticle; or they pass into superficial gangrene, which was spreading at the time of the patient's death, or is healed with loss of substance." Purpuric spots are sometimes, although rarely, one of the earliest signs of the fulminant and purpuric forms of the malady; or they may occur at any period during the more advanced stages. Usually they appear at some period during the first four days, chiefly perhaps during the first or second day. Sometimes, with or without the purpuric spots, there is a cyanosed aspect of the skin, or a peculiar livid mottling. During recovery the pupuric spots gradually lose their definition and fade away, passing through the different stages of colour which mark a healing bruise. (*c*) *Roseola, erythema, &c.* Rose-coloured spots or patches are occasionally observed; also erythema, more or less diffused, a rubeoloid eruption, and urticaria.

7. *Temperature.*—The temperature of the body, as marked in the axilla, is heightened in every case; except, perhaps, those accompanied by profound collapse from the beginning. In many cases this heightened temperature is found contemporaneously with the invasion of the disease; in other cases there is no conspicuous increment until the second or third day. When the characteristic symptoms of the malady are developed, the temperature rarely falls below 100° Fahr., and, as the disease advances, it ranges in adults from 100° to 105°, in

children sometimes even higher. There is no constant or conspicuous difference between the morning and evening temperature, as in typhus and typhoid. A steady fall marks the decline of the disease and the approach of recovery; a rapid fall ushers in collapse or death.

COMPLICATIONS.—The course of the disease is liable to be modified by certain complications. Of these the chief are as follows: (*a*) Thoracic inflammations: pleurisy, pneumonia, bronchitis, or pericarditis. Dr. S. Gordon describes œdema of the lungs and diffuse pulmonary apoplexy. (*b*) Swelling or inflammation of the parotids. (*c*) Inflammation of the large joints, marked by swelling and pain, and sometimes ending in sero-purulent effusion. This complication, in its less aggravated form, has been described by some writers as rheumatic. (*d*) An Inflammatory condition of the eyes and ears, as already noted. (*e*) Bed-sores. Large, deep, black sloughs occurred in four cases out of 161 treated in the Philadelphia Hospital in 1866. (*f*) The course of the disease has also been complicated by the supervention of other maladies, namely, (1) *Intermittent fever*, or certain paroxysmal phenomena simulating malarious poisoning: a complication which has led to erroneous notions of the nature of the disease. In the outbreak on the Lower Vistula cases were observed in which regular or irregular intermissions took place that could not be assigned to a malarious origin. (2) *Typhoid fever*, the two diseases prevailing simultaneously in the same district. The symptoms of both diseases, more or less modified, pursue their course together, and the characteristic lesions of typhoid as well as of epidemic cerebro-spinal meningitis are discovered after death. (3) Measles and scarlet fever. (4) Cholera (LEVY).

DURATION.—In the outbreak on the Lower Vistula, the most acute cases terminated fatally in from 12 to 72 hours. Cases of less intensity, but in which the patient eventually died in a typhous state, lived from 8 to 14 days, the characteristic symptoms of the disease persisting to the end. In the more protracted, or complicated cases, from 5 to 8 weeks have passed before a patient entered upon convalescence, and death has taken place in the 6th or 7th week. Of the cases observed in the Philadelphia Hospital (1866), the duration of those which ended fatally was from 48 hours to 11 days; of those which recovered, from 20 to 30 days, the acute symptoms rarely exceeding a fortnight. In the recent outbreak in Ireland, Dr. S. Gordon has reported a well-marked case which ended fatally after less than *five hours'* duration. A large proportion of the fatal cases in that outbreak died in from 10 to 48 hours; in other cases the fatal ending did not occur until the end of the second and during the course of the third week of the disease. The duration of the disease, as shown by death, may be clearly stated; as marked by the beginning of convalescence, it does not admit of definite description. Moreover, convalescence is often very protracted. The course of the disease towards recovery is sometimes interrupted by *relapses*.

TERMINATION.—The disease terminates after a longer or shorter period of convalescence in health; or it entails during convalescence a series of physical or mental ills; or it ends in death. The rate of *mortality* of the disease is the measure of probable recovery. It varies much in different outbreaks, but is at all times formidable. Among the cases observed in the Philadelphia Hospital in 1866 the mortality was 33 per cent.; in the Hardwicke Hospital, Dublin, the same year, the mortality was 80 per cent. Dr Stillé remarks that, "while ten epidemics in various places, occurring between 1838 and 1848, presented an average mortality of 70 per cent., a similar number occurring during the decade from 1855 to 1865 give an average mortality of about 30 per cent. This remarkable fact would seem to indicate a gradual decline of power in the epidemic." The minimum rate of mortality recorded is 20 per cent. The proportion of fatal cases is greatest, and the duration of these cases least, at the commencement of an outbreak. The *sequelæ* which interfere with the restoration of the patient to perfect health are: Deafness; impaired vision from structural changes in one or both eyes; paralysis of one or more limbs or of certain groups of muscles; impaired memory; carbuncles, and boils. Dr. S. Gordon describes a case in which the patient "recovered from all the acute symptoms, but gradually passed into a state of almost organic life. He ate, drank, and slept well; he passed solid feces and urine without giving any notice, yet, evidently, not unconsciously; he was excessively emaciated, and there was a peculiar mouse-like smell from him; he seemed to understand what was said to him, but he could not answer; he never called for anything; his breathing was rather slow; his pulse 120; his heart acting with a peculiar strong jerking motion; his eye was quite well, as also his knee [he had suffered from ulceration of the right cornea and immense effusion into the right knee-joint]; he could draw his legs and arms up to him; but he could not use his hands at all." Such was the condition of the patient fifty-eight days after the invasion of the disease.

MODE OF DEATH.—Death chiefly occurs from (*a*) asphyxia, caused by damage to the respiratory nerve centres; (*b*) from asthenia; and (*c*) in some of the fulminant cases probably from necræmia, so profound are the changes observed in the blood.

DIAGNOSIS.—In some instances the disease approximates in certain symptoms to *typhus* or *typhoid*, and it occasionally prevails contemporaneously with both maladies. But the history of the development and progress of the disease, with the absence of characteristic eruption, will usually clear up any doubt. From *sporadic spinal meningitis* the disease is distinguished by its epidemicity, the almost constant concurrence of cerebral disorder, the tendency to cutaneous eruptions, the great mortality, and the rareness of protracted or permanent paralysis or contraction of the lower limbs. The distinction between the disease and *cerebral meningitis* is less defined as to particular symptoms, especially in children, but the mode of development of the malady will rarely leave much room for doubt during an outbreak. *Tetanus* (so called idiopathic), with which it is suggested that epidemic cerebrospinal meningitis may, under certain states of spasm, be confounded, never manifests the early grave cerebral symptoms which occur in the latter disease. The tetanoid contraction also observed in epidemic cerebro-spinal meningitis is rarely, if ever, as in tetanus, aggravated by sudden and painful spasms. The grouping of the symptoms in the two diseases is, moreover, altogether different. Dr. S. Gordon points out the possibility of confounding the purpuric form of epidemic cerebro-spinal meningitis with malignant measles, which malady has often prevailed at the same time. The last-named disease may resemble the fulminant form of the first-named in several respects particularly the rapidity of development, and dark colour of the eruption, and the rapid appearance of petechiæ; also in the sudden and often extreme collapse which accompanies the invasion of the affection. But the eruption of measles rarely loses its characteristic form, and the affection of the respiratory passages is commonly present, while purpuric spots and patches are seldom observed. Dr. S. Gordon also states that he has known several cases in which the earlier symptoms of epidemic cerebro-spinal meningitis in young excitable females have been mistaken for *hysteria.*

PROGNOSIS.—At the best, the prognosis of the disease is very grave. The mortality may be equally great in each of the three varieties, and petechiæ and purpura do not necessarily indicate an aggravated degree of danger as in other acute diseases. In 50 per cent. of the cases recorded by Dr. Githens, in one of the least fatal outbreaks known, petechiæ were present, and it is especially remarked that neither this nor any other form of eruption had "any reference to the prognosis." But when hemorrhage into the cutis is extensive, either from the number or the size of the spots, and is accompanied by marked signs of vital prostration, it indicates an extremity of danger, although not a certainty of death. The disease is more fatal among infants and young children than among youths and adults in the prime of life; but, in some outbreaks, the latter have suffered most. After thirty years of age it becomes more dangerous. Life is most endangered in the earlier days of the disease, particularly during the first five. But danger is present at all periods of the malady, and the convalescent is not entirely safe until health is fully restored. Of the special symptoms, whether of excitement or depression, the rules of prognosis hold good which apply to other highly fatal acute maladies.

MORBID ANATOMY.—The essential anatomical characteristics of the disease, found after death, are hyperæmia, often intense, of the pia mater of the brain, and spinal cord; with more or less copious subarachnoid, and interstitial effusion into the meshes of the congested pia mater, either of serum, or of a transparent, gelatinous material, or of purulent matter: the latter more frequently than either of the two former. The purulent effusion is of greenish or yellowish colour, and is sometimes flaky. It has been found in a case in which death took place in less than five hours from the invasion of the disease (S. GORDON). The extent to which these appearances are observed and the amount of effusion varies greatly in different cases. No part of the encephalic or spinal pia mater and arachnoid may be free, or certain portions alone may be affected; but effusion is limited to the subarachnoid space, and does not occur into the arachnoid cavity. Under the microscope, according to Dr. Burdon Sanderson, the gelatinous material is "always found to consist of cell-like bodies, either adhering to each other so closely that they could not be completely separated, or imbedded in a transparent interstitial substance, while the sero-purulent liquid which occupied the spinal sub-arachnoid space, and in some cases the ventricles, exhibited corpuscles and granules floating freely. The cell-like bodies, although in general resembling pus corpuscles, did not present that uniformity of size and character which is met with in normal pus. They were usually, but not always, of regular circular contour, and varied in diameter from $\frac{1}{3500}$th to $\frac{1}{1200}$th of an inch. Occasionally they exhibited the appearance of an external cell-membrane, but in most instances this could not be made out even in perfectly fresh exudations—as, *e. g.*, in those cases which were examined as early as eight hours after death. They invariably contained numerous granules, some of which were cleared away on the addition of acetic acid. Those which remained were highly refractive, but did not assume any special form of arrangement. The interstitial substance was beset with granules, some of which were albuminous, others fatty. It was most abundant and distinct on the surface of the spinal arachnoid, where it infiltrated the fine connecting tissue and minute bloodvessels of the pia mater."

For the rest, the nervous system of the brain and spinal cord is usually gorged with blood, except death has taken place late in the course of the disease. The visceral arachnoid is frequently thickened and opaque. Softening of some portion of the spinal cord has sometimes been observed; and Mr. J. Simon thinks that, "for practical purposes, the state of the covering membranes of the nervous centres may be regarded as a mere index of changes more or less distinctive, which those centres in their own intimate composition have at the same time undergone; and hence it is that the essential phenomena of the disease during life consist in disturbances, more or less grave, of the functions of these all-important organs."

In fatal cases of the simple and purpuric forms of epidemic cerebro-spinal meningitis the characteristic anatomical lesions are almost invariably found. In the fulminant form of the disease they are often absent. The cases in which there is no indication of morbid change in the nervous centres are exceedingly few. It has been suggested that in these cases death has occurred so rapidly that there was insufficient time for the formation of a structural lesion. In connection with this explanation the case recorded by Dr. S. Gordon must be borne in mind, in which purulent effusion was found, although the whole duration of the attack was under *five* hours. Practically the apparent absence of characteristic anatomical change in the nervous centres in certain rare cases of epidemic cerebro-spinal meningitis is a phenomenon analogous to that which sometimes occurs in rapidly fatal cases of malarious, variolous, and scarlatinous poisoning, in which the characteristic eruptions or lesions of the diseases have not been developed.

No lesions peculiar to epidemic cerebro-spinal meningitis are found in other organs of the body. Such lesions as occur elsewhere than in the coverings of the brain and spinal cord usually have a definite relation to the thoracic, abdominal, or genito-urinary complications which may have happened during the progress of the malady. In the fatal cases of the purpuric form of the affection recorded by Dr. S. Gordon, and other writers, an excessive fluidity of the blood was noted.

HISTORY AND GEOGRAPHICAL DISTRIBUTION.—The history of epidemic cerebro-spinal meningitis dates only from the fourth decennium of the present century. At that period the disease was for the first time, clearly distinguished as an independent malady; and with the light then obtained, outbreaks which had occurred earlier in the century, in various localities of both the Eastern and Western hemispheres, and had been recorded under other names, were recognized as of similar character. It has been sought, indeed, to show that epidemic cerebro-spinal meningitis has probably existed from remote periods (TOURDES, BOUDIN). The probability may be admitted, for the first recognition of a malady as an independent affection does not necessarily imply that the malady is new.

In 1837 epidemic cerebro-spinal meningitis broke out in the southwest of France, and prevailed in various localities of the district intervening between Bayonne and La Rochelle, and along the whole line of the Pyrenean frontier. Dax, Bordeaux, Auch, Foix, Narbonne, and Perpignan suffered, as well as the two cities previously named. The disease, according to Boudin, at the commencement and during the continuance of this outbreak, chiefly showed itself among troops in garrison. During 1837 and 1838 the garrisons of Bayonne, Dax, Bordeaux, Rochefort, and La Rochelle suffered. From 1838 to 1841 the disease was prevalent among the garrisons of southeastern France, particularly those of the valley of the Rhone. Thus it broke out at Toulon, Marseilles, Aigues-Mortes, Nismes, Avignon, and Pont-Saint-Esprit. In the course of the four years, 1839–40–41–42, the malady appeared in succession among the troops occupying the fortresses of Strasburg, Schelestadt, Colmar, Nancy, Metz, and Givet. From 1839 to 1842 it prevailed among the forces at Versailles, Saint-Cloud, Rambouillet, and Chartres. Those stationed along the coast of Brittany, at Brest, L'Orient, Nantes, and Ancenis, suffered in 1841; and during 1840 and 1841 the disease manifested itself among divers detachments of a regiment scattered at Laval, Le Mans, Château-Gontier, Tours, and Poitiers. It was during the outbreak of which the most remarkable episode is thus sketched by Boudin that a scientific knowledge of epidemic cerebro spinal meningitis was first obtained. From 1837 to 1848 inclusive, forty-seven outbreaks of the malady were recorded in thirty-six of the eighty-six departments into which France was then divided. These outbreaks were distributed in the departments of the Loire, Rhone, Bouches-du-Rhone, Bas-Rhin, Seine, Seine-et-Oise, Landes, Basses-Pyrénées, Charente-Inférieure, Gard, Vaucluse, Var, Moselle, and Loiret. The three first-named departments suffered most. In 1840, the disease appeared in Naples and prevailed in the Papal

States. The same year it broke out among the French garrison at Douera, Algeria, and during the next seven years it attacked numerous towns and localities of the province, affecting the civil population, both European and native, as well as the military. In 1844 an outbreak of the disease took place among the civil population of Gibraltar; and in 1846 the malady showed itself slightly in Ireland among the inmates of the Rathdown, South Dublin, and Belfast workhouses, and several cases occurred among the population of Dublin. During 1849 and 1850 the disease was prevalent to some extent among the French troops in Italy, and in the last-named years several localities of France suffered from it. Epidemic cerebro-spinal meningitis appeared in Denmark in 1841, and prevailed in that country until 1848. The disease was first noticed in Sweden in 1854, this country again suffering from it in 1861. In Norway the malady broke out in 1859, and it has prevailed in that country more or less since that year. During 1860 the disease was prevalent in Holland; and the same year it was widely spread in Portugal. In 1863, 1864, and 1865 an extensive outbreak occurred in North Germany; and in 1866 the malady broke out in Dublin and elsewhere in Ireland.

In the United States (where the disease may be traced back to the commencement of the century), epidemic cerebro-spinal meningitis became prevalent about the same time that it exhibited great activity in Europe. From 1842 to 1850 inclusive, a series of outbreaks took place in the States of Kentucky, Tennessee, South Illinois, Mississippi, Arkansas, Alabama, Pennsylvania, Massachusetts, New York, and North Carolina. After this period there would appear to have been an interval of comparative inactivity. In 1861 the disease broke out in North and Central Missouri, and from that time to the present it has prevailed, more or less extensively, in almost all, if not all, the States of the Union, with the exception, perhaps, of the Pacific States. In 1862 outbreaks were recorded in Connecticut, Kentucky, Indiana, and Tennessee; in 1863, in Rhode Island; in 1864, in Pennsylvania, Ohio, Illinois, New York, Maryland, Massachusetts, and Vermont; and in 1865 in North Carolina and other Southern States. During the past year the disease was active in several States.

It must be borne in mind that these historical notes very imperfectly represent the probable prevalence and geographical distribution of the disease. They simply include a brief summary of outbreaks which have come under the notice of thoughtful observers who have published their observations. The history of the malady in the British Islands is, perhaps, less liable to error from this source. The earliest recorded outbreak of the disease occurred in Ireland during the early months of 1846. It broke out to a very limited extent among the boys living in the Rathdown Union, South Dublin, and Belfast workhouses; and two cases, both females, one aged 17 years, the other 36 years, were admitted into the Hardwicke Hospital Dublin.[1] Prior to this outbreak, there is not any trustworthy history of the presence of epidemic cerebro-spinal meningitis in the British Islands.

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[1] Dr. Robt. Mayne, Dublin Quarterly Journal of Medical Science, 1846, vol. ii. p. 95.

It is not improbable, however, that the disease existed at Blackaton, in Devonshire, in 1807;[1] and at Sunderland in 1830.[2] Dr. B. W. Richardson saw an unquestionable case at Mortlake, Surrey, in 1843.[3] From the time of the outbreak in 1846, cases of a similar malady were occasionally observed in Dublin, until the latter half of 1850, when they became more common.[4] There is no further notice of epidemic cerebro spinal meningitis in Ireland until the year 1865, when cases began to be again observed in Dublin.[5] A case of cerebro-spinal meningitis was observed by Dr. Samuel Wilks, in each of the three years 1856, 1858, 1859, in the metropolis.[6] In October, 1859, a fatal case of cerebro-spinal disorder, with petechial eruption, came under the notice of Dr. Henry Day, in the vicinity of Stafford. In this case, hyperæmia of the meninges of the brain and spinal cord, and copious effusion of fluid at the base of the brain, were discovered after death. A similar but more rapidly fatal case was also observed by Dr. Day, in the Stafford General Infirmary in September, 1865.[7] The largest and most fatal outbreak of epidemic cerebro-spinal meningitis which has occurred within the limits of the United Kingdom began in Ireland in March, 1866, and attained its chief development in the subsequent winter. Its effects were almost entirely limited to the sister island, and the brunt of the outbreak fell upon Dublin. Other localities affected were Tullamore, Parsonstown, Mitchelstown, Thurles, Clondalkin, and the Curragh camp. The cases were not very numerous in Dublin; and in the country towns they were comparatively few. It is noteworthy that, as in the earlier outbreaks in France, the military in Ireland, in proportion to their strength, suffered prominently from the disease. In some of the country districts cases were recorded among the troops alone, or among persons in immediate connection with them.[8] In January and February 1867, an outbreak of a disease characterized by severe rigors, tetanic convulsions, intense neuralgic pain in the head and upper part of the trunk, increased sensitiveness of the surface, obstinate vomiting, restlessness, and, in one instance at least, by a dark purple eruption, but of which not a single case died, took place at Bardney, in Lincolnshire, a village about ten miles east of Lincoln, on the verge of a fen country, and having a population of 1500, the bulk of whom are engaged in agricultural pursuits.[9] Two cases of epidemic cerebro-spinal meningitis were recorded in London in the summer of 1867. One, a case of the fulminant form of the malady, in which death occurred in twenty-seven hours, took place in

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[1] Mr. Henry Gervis, Medico-Chirurgical Society's Transactions, vol. ii.

[2] Dr. John Scott, Medical Times and Gazette, 1865, vol. i. p. 515.

[3] Social Science Review, May, 1865, p. 398.

[4] Dr. McDowell, The London Journal of Medicine, 1851, vol iii. p. 858.

[5] Dr. Kennedy, The Medical Press and Circular, June 12, 1861, p. 551.

[6] The Lancet, April 15, 1865, p. 389.

[7] Clinical Histories and Comments, 1866, pp. 3–7.

[8] Dr. E. D. Mapother, and Staff-surgeon Dr. Jeffrey A. Marston, The Lancet, July 6 and July 13, 1867.

[9] G. M. Lowe, M.B. The Lancet, June 26, 1867, p. 790; Mr. Geo. Newman Woolley, The Lancet, Aug. 3, 1867, p. 130.

June,[1] the other, a case of the purpuric form, in which death occurred in seven days, took place in July.[2]

The peculiarity of distribution of the disease in the British Islands, its epidemic manifestation being limited to one portion of the kingdom, and chiefly, even in recurrent outbreaks, to a small section of the population of that portion, is not an isolated phenomenon. Notwithstanding the wide geographical prevalence of the malady as shown by the foregoing details, it must not be concluded that this prevalence represents a general diffusion of the disease among the different populations during the periods of its activity. The outbreaks of epidemic cerebro-spinal meningitis, as a rule, are limited to small sections of a population, and its distribution is by a series of isolated outbreaks, rather than by extensive spreading. This was shown remarkably, as already described, during the outbreak in France in 1837 and following years, when the ravages of the malady were principally confined to certain garrisons, and even to small sections of a garrison, without affecting the surrounding population. A like limitation of the disease to certain detachments of troops was observed during the recent war in the United States; and the restriction of the malady to small portions of workhouse populations, as in the first outbreak in Ireland, is an analogous phenomenon. Perhaps the sole outbreak in which an extensive diffusion of the disease among a community has occurred was that in the province of Dantzic, in 1864–65. The tendency to reproduction in a locality, as in Dublin, was particularly observed during the great outbreak in France from 1838 to 1848, when the disease reappeared again and again among the forces in Bayonne, Versailles, and Avignon, notwithstanding changes of garrison. The freedom of England and Scotland from outbreaks of so widely spread a malady is very remarkable; particularly if the seeming occasional cases of the disease to which reference has been made are to be regarded as true examples.

ETIOLOGY.—(*a*) *Predisposing Causes.—Age.* The personal liability to the disease is not governed in any definite manner by age. In some epidemics children, in others young people, in others again adults of from thirty to fifty years, have suffered in greatest proportion.—*Sex.* Generally, and in some outbreaks very markedly, *males* are more liable to the disease than *females.—Profession.* During the outbreaks of the disease in France from 1837 to 1849, a peculiar proclivity to the disease was observed among soldiers. But in subsequent outbreaks in France, and wider-spread outbreaks elsewhere, no special liability to the disease was manifested among any vocation.—*Climate and Seasons.* In the Eastern hemisphere our knowledge of the disease is limited to Western and Central Europe and Algeria, the northern boundary of the district not passing beyond lat. 61° N., the southern not beyond lat. 35° N.—the one extreme closely approaching the arctic, the other the torrid zone. In the Western hemisphere the records of the malady are confined to the populous districts of the eastern division of the United States, from lat. 30° N. to lat. 48° N. It is noteworthy that the northern and southern limits of distribution in both hemispheres but slightly overlap the isothermal lines 5° and 20°. *Season* acts as an unquestionable and powerful predisposing cause of epidemic cerebro-spinal meningitis, which is especially a disease of the cold months. Of 216 local outbreaks in France and the United States, 166 prevailed between December 1st and May 31st; 50 in the other six months of the year. In Sweden of 417 local outbreaks, 311 took place in the former period of the year, 106 in the latter (STILLÉ). During the recent outbreak in Ireland, the brunt of the disease fell between January and July, 1867. Of 85 outbreaks in various parts of Europe and the United States, dated by Hirsch, 33 prevailed in winter, 24 in winter and spring, 11 in spring, 1 in spring and summer, 2 in summer, 1 in summer and autumn, 1 in autumn, 1 in autumn and winter, 3 in autumn, winter, and spring, and 6 prevailed throughout the whole year.—*Locality and soil* do not exercise any manifest influence over the disease. It has been observed on low grounds, highlands, and on soils of the most various character indifferently.—*Sanitary conditions.* No definite relation exists between the sanitary state of habitations and of individuals and the occurrence of the disease. It has prevailed in some epidemics as well among the affluent as the impoverished—among those who are well-fed, well-housed, and well-clothed, as among those who are ill-fed, ill-housed, and insufficiently clothed. In certain outbreaks, as in that on the Lower Vistula, the prosperous classes suffered to a much less extent from the malady than the poor and miserable who were subjected to privation and much foulness of persons, dwellings, and atmosphere.

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[1] Dr. Edwards Crisp, The Lancet, June 22, 1867, p. 773.

[2] Dr. Thomas Clark, The Lancet, July 13, 1867.

(*b*) *Exciting Causes.*—Fatigue has been mentioned as an exciting cause. In some of the early outbreaks of the disease among French troops, France being at war at the time, fatigue apparently exercised a determining influence. Again, during the recent outbreak in Ireland, the malady appeared very early among a "flying column" of troops occupied in the suppression of the Fenian disturbance, and exposed to great fatigue and inclemency of weather. But fatigue has played little or no part in determining the disease among the civil population, especially among children and the inmates of workhouses and prisons.—*Cold.* The marked predominance of the disease in the winter and spring months has suggested a causal connection with cold. Hirsch has submitted the question to a detailed examination, and with this result: that, although the suspicion cannot be excluded that the temperature of winter and spring may have some direct effect upon the genesis of the disease, "the modifications in the mode of living incidental to these seasons exert, in a far higher degree an influence favourable to the presence of this as of many other infectious maladies."[1]—*Certain Insanitary States.* There is not any constant or even common relationship between any insanitary state and the appearance of the disease. Neither foulness of house and its surroundings, nor of the atmosphere, whether from putrid emanations or from overcrowding, nor impurity of any other kind, has any determinate relation with epidemic cerebro-spinal meningitis. But Hirsch remarks[1] of the outbreak in the province of Dantzic in 1865, that "the disease prevailed exactly in that season of the year in which, on account of inclement weather, many individuals were crowded together into small and dirty rooms kept constantly closed by their occupants, and from which all ventilation was excluded, and in which the before-mentioned unfavourable hygienic conditions [dampness, great filth, and an atmosphere loaded with putrid emanations] were extremely perceptible." The causes here suggested have been held to be not altogether inoperative in other and more circumscribed outbreaks.—*Communication of the sick with the well.* The great majority of observers have come to the conclusion that the disease is incommunicable from the sick to the well. Among the minority who hesitate to accept this deduction without reservation are Professor Hirsch, Professor Stokes, and Mr. J. Simon. The facts which suggest the possibility of the active cause of the disease being portable in some way are of the following character: (*a*) A child was seized with epidemic cerebro-spinal meningitis, and died. A second child of the same family was attacked with the malady a few days later. The day following the attack of this child, the mother, who slept in the same bed with it, sickened of the disease.[2] (*b*) 1. On the 8th February, 1865, a youth, aged 20 years, was attacked with the characteristic symptoms of epidemic cerebro-spinal meningitis. He was nursed by a woman from another village. The youth died, and after his death the woman returned home. She soon sickened, and she died of the epidemic disease on the 26th February. There had been but one case previously in the village. To the interment of the woman, the funeral obsequies, as customary in the district, being performed with the coffin open, came a family from another locality. After the return home of this family, a child, three months old, sickened immediately of meningitis and died within twenty-four hours. Then a man who had accompanied the family to the interment was attacked with the disease, and died on the 2d of March. Lastly a girl, in the same locality, who had also been at the funeral, was seized, and died on the 7th March. 2. At another village, two children of one family, aged three and a half and one and a half years respectively, died of the epidemic, one on the 27th January, the other on the 7th February. The clothes of the deceased were taken to a neighbouring village, and came into the possession of a girl aged five years. She soon sickened of the epidemic, and died on the 14th February.[3] (*c*) Boudin relates instances of the appearance of the disease in garrisons, and among the civil population of towns, after the introduction of detachments of troops among whom the disease had prevailed or was prevailing at the time.

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[1] Transactions of the Epidemiological Society, vol. ii. p. 369.

The foregoing facts simply suggest the possibility of the active cause of epidemic cerebro-spinal meningitis being communicable by the sick to the well. This possibility, notwithstanding the apparent formidable array of facts to the contrary, is not to be lightly dealt with. The lesson taught by the difficulties and doubts which beset the discovery of the communicability of typhoid fever and of cholera will have been strangely misunderstood if it is necessary to urge upon observers the importance of keeping the question of the possible communicability of epidemic cerebro-spinal meningitis constantly before the mind. In the consideration of this question, however, a caution is needed. The term "contagion" is used too indiscriminately. It has been so long employed to express the manner of transmission of disease which is witnessed in smallpox, scarlet fever, or typhus, that it is difficult to dissociate the idea of this manner from the word. It is almost impossible in reading the opinions of those writers who have come to the conclusion that epidemic cerebro-spinal meningitis is not a "contagious" disease, to avoid the suspicion, from their use of the adjective, that they have looked upon the question too exclusively from the point of view suggested by the diseases named. It is obvious that contagiousness of a like character to that of smallpox, scarlet fever, or typhus, is not possessed by the malady under consideration. The question is: Does epidemic meningitis, like typhoid fever or cholera, possess a peculiar contagiousness of its own, a property of communicability peculiar to itself? This has yet to be solved. Another explanation of the facts which appear to indicate a possible communicability of the disease from the sick to the well is, however, open, and is set forth in the next paragraph.

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[1] Transactions of the Epidemiological Society, vol. ii. p. 372.

[2] Professor Stokes, The Medical Press and Circular, June 19, 1867, p. 581.

[3] Hirsch, Transactions of Epidemiological Society, vol. ii. p. 373.

Diseased grain.—Dr. B. W. Richardson has suggested that epidemic cerebro-spinal meningitis may possibly arise from the consumption of diseased grain, after the manner of ergotism, and perhaps acrodynia. He thinks that the probabilities are altogether in favour of the suggestion, that "the cause, in fact, is a diseased grain, or fungus, contained in some kinds of flour out of which the bread-stuffs are made. This fungus may not be present in large quantities, and many persons may eat of the food without getting a poisonous part; but one will get it out of a number, and this without any communication beyond the breaking of bread together: the disease may occur in one member of a family, leaving the rest free, and in this irregular way it may be distributed, in an epidemic form, over a large surface of the country." He adds, "If my hypothesis, as regards cause, be correct, there is little danger of the disorder extending widely in this country; for of our cereals used as food, nearly the whole of the population now select wheat, and our wheat generally is selected for the market with great judgment and circumspection. Any cases, therefore, that might occur would be isolated, and would be easily traced out and prevented."[1] This suggestion opens out an altogether new field of inquiry respecting the origin of the disease, and it demands active and thoughtful consideration in subsequent outbreaks. Dr. H. Day, of Stafford, has endeavoured, by experiments on the lower animals, to obtain some light on the subject. He fed three rabbits with unsound grain (wheat, oats, ergot of rye, and mouldy bread) with this result: In all the animals a spasmodic affection was produced, and in two inflammatory changes in the right eye, proceeding in one case to ulceration of the cornea, and evacuation of the contents of the globe. One of the rabbits died on the eighth day, the other two were killed on the twelfth day, and in all more or less congestion of the membranes of the spinal cord was found on dissection.[1]

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[1] Social Science Review, May, 1865, p. 403.

The sum of our knowledge of the etiology of epidemic cerebro-spinal meningitis is this; that the clue to its explanation has not been discovered.

NATURE.—1. *Is the disease malarious, as suggested by some writers?* The outbreaks in which the disease has occurred in malarious districts, or in which the malady has shown an intermittent character, are too few in number to admit of much, if any, doubt resting upon the answer. There is no sufficient ground for believing that the malady is of malarious origin. The numerous examples of prevalence of the disease in localities free from malaria set the question aside definitely. Even when intermissions or remissions have been observed in the progress of the malady, it must not be hastily assumed that they are consequent upon malarious poisoning. Hirsch has shown that certain cases of epidemic cerebro-spinal meningitis, distinguished by intermissions and remissions, which came under his observation, took place in the course of an outbreak in a district free from malaria. Further, he states that this outbreak prevailed at a season (winter) and in a state of climate (intense cold) which notoriously exclude the prevalence of malarious diseases, even where endemic; that the period of life (1—5 years) least liable to malarious disease furnished the largest contingent of victims, while the classes most advanced in life, and who are most liable, escaped the epidemic in a remarkable degree. Finally, the infallible test of malarious disease, quinine, by its inutility in cases of the epidemic which assumed an intermittent or remittent character, showed the non-malarious nature of the affection.[2] 2. *Is epidemic cerebro-spinal meningitis a form of, or allied to, typhus?* Epidemic cerebro-spinal meningitis differs from typhus in the aspect of the patient, rhythmical progress, range and course of temperature, form of cerebral affection, character of eruption, sequelæ, rate of mortality, anatomical lesions, and manner of dissemination. Differing in all essential particulars, doubt can only arise when the two diseases prevail together. Under such circumstances, cases of the fulminant and purpuric forms of the one malady may be difficult to discriminate from the graver and more rapidly fatal forms of the other. Doubt also may arise when in the course of the former disease typhous or typhoid symptoms occur. But such a doubt applies equally to the discrimination of the disease from measles and typhoid fever, as from typhus. 3. *Is epidemic cerebro-spinal meningitis a true or a pseudo-epidemic disease?* Is this disease a true epidemic disease in the sense of its being due to a specific, febrile poison (to which class of diseases the term epidemic is now well-nigh alone restricted)? Or is it a pseudo-epidemic malady, as being an exaggerated and more prevalent form, from certain climatic conditions, of an idiopathic inflammatory affection of the brain and spinal cord? No absolute distinction can be drawn between sporadic cerebro-spinal meningitis and the epidemic malady of the same name. But there are certain broad and well-defined differences. The conjoined inflammatory affection of the covering membranes of the brain and spinal cord, which is the rule in epidemic cerebro-spinal meningitis, is a rare exception in sporadic inflammation of the envelopes of the central nervous centres. Again, the indications of blood-change which are so common in the epidemic disease are never, or only in most exceptional cases, witnessed in the sporadic disease. It has been suggested that the blood-change and herpetic and purpuric eruptions may be of nervous origin, and consequent upon the profound alteration in the nervous system. It has been suggested, also, that the purpuric eruption of epidemic cerebro-spinal meningitis may be one of several signs of a general tendency to purpura in disease, and merely an incidental phenomenon of the epidemic malady. Thus, in Dublin (1866–67), purpura had been observed in rheumatic fever,[1] and there was an outbreak of purpura among swine,[2] contemporaneously with the epidemic. The first suggestion touches a very curious question, which as yet does not admit of solution. But it is worthy of remark that the form of eruption which of all others is peculiar to epidemic cerebro-spinal meningitis is the *herpetic*, a form which, in some of its manifestations at least, as in herpes labialis, shingles, has singular neurotic relations. Mr. Jonathan Hutchinson has propounded the riddle, *Is herpes zoster an exanthem or neurosis?*[3] This is certain, that it is a symptom which has some definite connection with lesion of nerve trunks, if not nerve *centres*. The facts upon which the second suggestion is based are of interest, but they form too narrow a basis for conclusions. It is noteworthy that rare cases of cerebro-spinal meningitis are observed in the intervals of epidemic prevalence of the disease, even in this country (H. DAY; WILKS[4]). These cases are of much, although as yet undeterminate interest, in reference to the etiology of the disease. 4. *Is epidemic cerebro-spinal meningitis a disease, sui generis?* The association of symptoms shows that it is an independent malady; the aptitude to blood-changes in the course of the disease, judged by analogy with like changes which occur in acute specific diseases, suggests the inference that it is also dependent upon a specific poison, from whatever source derived. This is the deduction which appears to have the highest degree of probability in the present state of our knowledge.

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[1] Clinical Histories and Comments, pp. 18–23.

[2] Transactions of the Epidemiological Society, vol. ii. p. 377.

An intercurrent question arises here: Is the fulminant form of epidemic cerebro-spinal meningitis really a variety of the disease, or a different malady altogether? Dr. R. D. Lyons maintains that in the recent prevalence of the epidemic in Dublin, two independent diseases existed. The one characterized by its collapse, profuse purpuric eruption, great rapidity of course, fatality, and absence of anatomical lesion in the nervous centres after death, he designates *febris*

[1] Dr. Banks, The Medical Press and Circular, June 19, 1867, p. 580.

[2] Dr. Mapother, The Lancet, July 13, 1867, p. 39.

[3] London Hosp. Reps., vol. iii. p. 70.

[4] The Lancet, April 15, 1865, p. 388.

nigra; the other was the disease commonly known as cerebro-spinal meningitis. But it is to be remarked that the two varieties of disease have never been observed except in the same epidemic; that they pass by insensible grades the one into the other; that the most highly developed symptoms of the so-called *febris nigra* sometimes occur together with the most marked symptoms of cerebro-spinal meningitis; and that it is more consistent with experience to consider the two series of symptoms as indications of one and the same malady, rather than two maladies going forward at the same time in the same patient. A second intercurrent question is, whether the purpuric form of the disease be of scorbutic origin? The question amounts to little more than a suggestion. There are no facts which support an affirmative answer; for, apart from other well known signs, purpuric spots are not indications of a scorbutic taint.

TREATMENT.—*Prophylactic.*—Ignorance of the true etiology of the disease limits our preventive efforts to general sanitary measures, applicable to all epidemic diseases, for the purification of houses and localities. Mr. J. Simon, recording the conditions under which the disease has prevailed, writes: "I am strongly of opinion that the best sanitary precaution which in the present state of knowledge can be taken against the disease, must consist in care for the ventilation of dwellings." He adds, however, "that in some cases, according to local reports, the distribution of an epidemic has very decidedly not been governed by conditions of overcrowding and ill-ventilation." Dr. B. W. Richardson's suggestion as to the cause of the disease should lead to the careful microscopic examination of all bread-stuffs and farinaceous preparations in use among families and communities where the disease breaks out, and the disuse of such as may be of doubtful character.

Curative.—The treatment of epidemic cerebro-spinal meningitis is as unsatisfactory as that of cholera. The evidence of the course of the disease having been beneficially affected in any outbreak by the administration of medicine is very doubtful. The too common rapid progress of the malady to death, as in cholera, and the nature of the lesions determining death, necessarily set at naught efforts to control it; medicine not being guilty either of inaptitude or inactivity. The control of this disease, as of cholera or trichiniasis, is a question of preventive rather than curative treatment, and must depend upon the discovery and limitation of its cause. In the earlier outbreaks, epidemic cerebro-spinal meningitis was treated as an acute inflammatory affection, by bleeding and purgatives, with the general result that the fatality of the malady was probably invariably augmented. During the recent outbreak in Philadelphia, it was found that, in the more asthenic cases, cupping the nape of the neck was "of essential service in mitigating, and generally, indeed, in wholly removing the neuralgic pains which form so prominent and so severe a symptom in many cases of the disease" (STILLÉ). When the state of the patient forbade the abstraction of blood, dry-cupping used in the same locality afforded signal relief, and rendered the effects of vesication more prompt and complete. This was the experience of one of the least fatal outbreaks recorded. The experience of the majority of epidemics has been against any bloodletting, local or general. The deduction to be derived as to depletion from the general state of the circulation and the results of practice entirely coincide. For, as a rule, the pulse from the very outset contraindicates the withdrawal of blood; and, if in any case it should seem from the general symptoms that depletion might exercise some control over the central mischief, a thoughtful regard should be given to the future. The application of *cold* to the head and spine, either by means of ice or a freezing mixture, in Esmarch's India-rubber bags, is not open to the same objection as bloodletting, and has furnished by far the most satisfactory results of all direct treatment of the acute cerebro-spinal symptoms. In its use care should be taken not to prolong the application so as to depress or increase the depression already existing of the whole system. When the acute nervous symptoms are accompanied by marked prostration, it is advisable during the application of the ice to swathe the limbs in hot flannels, pack the legs and thighs with hot-water bottles, or bags filled with hot sand or salt, and cover the abdomen with thick layers of flannel or cotton-wool. From the very outset of the disease, care should be taken to economize the temperature of the body, and anticipate its fall; and in cases characterized by collapse, or much vital depression, the application of external heat in the manner just suggested is a cardinal point of treatment. Of medicaments directly addressed to the nervous symptoms, *opium* is the most valuable. It is especially indicated when there are much restlessness, acute delirium, sleeplessness, hyperæsthesia, and painful spasm. *Morphia* is the best form of administration, and subcutaneous injection perhaps the best mode. The drug should be given in decided and frequently repeated doses, and carefully watched. Stillé says of its use during the recent outbreak in Philadelphia: "We were in the habit of giving one grain of opium every hour, in very severe, and every two hours in moderately severe cases, and in no instance was produced either narcotism, or even an approach to that condition. Under the influence of the medicine the pain and spasm subsided, the skin grew warmer, and the pulse fuller, and the entire condition of the patient more hopeful. It seemed probable, however, that the full benefit of the opium treatment could be received by those only who were subjected to it in the early stages of the attack. Direct experience is here in perfect accord with the expectation which a knowledge of the pathological processes involved in the disease would naturally suggest."

A Committee of the American Medical Association has reported favourably of the *sulphate of quinia* in large doses, given at the very beginning of the disease. In some instances the drug seemed to abort the attack. The committee speaks also of the favourable results reported from the combined use of *ergot* and *chloride of iron*. Some American physicians have given *ergot* in combination with *belladonna*, and *belladonna* in combination with *quinine*, but with equivocal benefit. *Mercurials* have been freely used, particularly in the form of *calomel*, but their effect has been most questionable, except as purgatives.

Their indiscriminate use is to be utterly condemned, and their use at all to be discountenanced. A host of other medicaments have been made use of, of which it is requisite to note only *iodide of potassium*, *bromide of potassium*, and *arsenite of potash.* The circumstances under which the two former drugs have been used, and are most likely to prove beneficial, will suggest themselves to the practitioner. It does not appear that any decided good has arisen from their administration. In protracted cases of convalescence the arsenite of potash may prove a valuable remedy.

Of the general treatment of the patient the hot bath (102°–103°) is, when practicable, the most important. This should be followed, as recommended by the Committee of the American Medical Association, by friction with warm oil of turpentine. The *regimen* should be generous and nutritious from the beginning of the disease. In the acute stages soup of some kind or other, or milk, is needed; and as soon as appetite returns, *solid* viands of any digestible character must be given. In the graver cases where there is much restlessness and spasm or stupor, and food cannot be given by the mouth from the patient's refusal or inability to swallow, an attempt should be made to administer it by the rectum: when there is much thirst, the patient's fierce desire for drinks may be freely indulged. The state of the pulse is the principal guide to the use of *stimulants.* Their administration as a special remedy independently of the indications which generally govern their use has not been followed by good results; but they are called for when the condition of the pulse and the aspect of the patient show manifest flagging of the vital power. The *sequelæ* of the disease must be treated on ordinary principles.

Too frequently the state of the patient as to delirium, spasm, and irritability of the stomach prevents all internal treatment whether by medicine or food, and limits the efforts of the physician to external measures, restricting even their application. To this unhappy combination of unfortunate and uncontrollable conditions may reasonably be attributed to some extent the inefficacy of treatment.

BIBLIOGRAPHY.—In addition to the references in the text may be noted: The Eighth Report of the Medical Officer of the Privy Council, containing Mr. J. Simon's Memorandum on the Disease, and Dr. J. Burdon Sanderson's Report on the Epidemics prevailing about the Lower Vistula in the beginning of 1865.—Discussion in the Medical Society of the College of Physicians of Ireland; The Medical Press and Circular for May 29th, June 5th, 12th, and 19th, 1867.—Transactions of theAmerican Medical Association, vol. xvii., 1866, containing a Report of a Committee on the Disease.—Dr. W. H. H. Githen's Notes of 98 cases; The American Journal of the Medical Sciences, July, 1867.—Dr. S. Gordon; Dublin Quarterly Journal of Medicine, May, 1867.—Dr. C. Murchison; The Lancet, 1865, vol. i. p. 41.—Prof. A. Hirsch, Handbuch der historisch-geographischen Pathologie, 1866, vol. i. p. 163; Die Meningitis Cerebro-spinalis Epidemica vom historisch-geographischen und pathologisch-therapeutischen Standpunkte, 1866.—Dr. Stillé, Epidemic Meningitis or Cerebro-spinal Meningitis,

8vo., 1867, Philadelphia. This work contains a very copious bibliography, particularly valuable for its references to American monographs.—G. Tourdes, Histoire de l'Epidémie de Meningite Cérébro-Spinale observée à Strasbourg en 1840 et 1841. Paris, 1842.—J. Ch. M. Boudin, Traité de Géographie et de Statistique Médicales et des Maladies Endémiques, vol. ii. p. 564; Paris, 1857.—Consult Hirsch's great work and monograph.

III.

NEURITIS AND NEUROMA.

By J. Warburton Begbie, M.D., F.R.C.P.E.

Morbid appearances, the results of inflammatory action, are occasionally met with in nerves. Such are the consequences usually of injury; the nerves have been divided by a sharp instrument; or, if independent of wounds, they are in all probability connected with rheumatism or gout. There seems no reason to doubt that inflammatory action may likewise extend to nerves from the contiguous tissues.

In its general characters Neuritis resembles the inflammation of fibrous tissue. The fibrous investing sheath of nerves, or neurilemma, is indeed its usual seat; the appearances of inflammatory action being for the most part limited to it, and only seen in the form of red softening of the nervous tissue itself when the inflammation has been of an intense description.

A doubt as to the spontaneous occurrence of Neuritis has been entertained and expressed by several authorities. Boerhaave, for example, writes: "Nemo forte unquam vidit inflammationem in nervo; hæc vero si contingat, in sola *tunica vaginali* hæret."[1] Others, again, with even greater inaccuracy, have maintained the frequent existence of Neuritis.[2] Pathologically the inflammation of nerves may be acute or chronic; and these two conditions are described by Rokitansky as follows: The marks of the former (acute) are—(*a*) Injection and redness. The injection presents a linear arrangement, and the redness is partly caused by injection, and partly by small extravasations. (*b*) Looseness, succulence, and swelling of the nervous cord, due to infiltration of serum into the tissue of the neurilemma, and into the sheaths between the primitive nervous filaments. The nerve has lost its smooth, white, glistening appearance; its neurilemma is opaque, and has a rough and wrinkled look. (*c*) Exudation. This is generally a grayish or yellowish-red gelatinous product, which sooner or later becomes firm. It occupies the sheath and tissue of the neurilemma, and is likewise effused between the primitive filaments themselves. (*d*) The cellular tissue around the nervous cord always participates in these changes; it becomes injected, reddened, and infiltrated with a serous or sero-fibrinous fluid. Not only the neighbouring cellular tissue, but the sheaths of the muscles, the fascia, the subcutaneous cellular tissue, and the general integuments, become involved.

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[1] De Morbis Nervorum.

[2] See on this point Animadversiones de Neuritide. Praxeos Medicæ Universæ Præcepta, auctore Josepho Frank; Partis secundæ volumen primum, Sectio secunda. p. 131: also Elements of General and Pathological Anatomy, by David Craigie, M. D., p. 379.

Such a degree of inflammation as that now described may terminate in *resolution*, occurring quickly or slowly in different cases, or in *induration* of the nerve, and a permanent loss of its function in whole or in part. If the latter be the result, the nerve continues thickened, and more or less misshapen, forming a grayish cord, which is sometimes marked with black pigment and crossed by varicose vessels. The nerve filaments diminish in size and finally disappear, this result being in part due to the pressure to which they are exposed by the inflammatory product, and in part to their interrupted nutrition, for the vessels are obliterated by the inflammatory process. (*e*) In a more intense inflammation the primitive nervous filaments are destroyed. They are found in a state of red or grayish or yellowish-red softening, while the neurilemma is easily torn. (*f*) The fluid product of the inflammation may be purulent; and if so, the nerve appears highly discoloured, and infiltrated with purulent fluid tinged with blood. The neurilemma is then much altered, and readily gives way, while the nerve is converted into a yellowish-red, brownish-red, or chocolate-coloured pulp. The cellular tissue surrounding the nerve becomes infiltrated with yellow fibrinous exudation, and abscesses are formed in its course. (*g*) Ulcerative destruction of the nerve is the next step. But if the progress of inflammation be stayed before that point is reached, granulations appear, which become progressively changed into cicatrix tissue, as is observed in the stump of a nerve after amputation. Nerves, however, resist for a lengthened period the suppurative and sanious destruction which may be going on around them.

Chronic Inflammation is characterized by the varicose state of the vessels of the affected nerve, by products which become indurated, and gradually increase in quantity, and by a change of the nerve to a slate or lead-gray colour. Sometimes the products are not deposited uniformly throughout the nerve, and then nodular swellings are formed on it.[1] Romberg, when directing attention to the anatomical knowledge we possess of sciatica, speaks of Neuritis being found, but of its rare occurrence.[2] The same writer, however, refers to the possible production of Neuritis, by the sciatic plexus being dragged and irritated by the head of the child in a difficult labour. Valleix and Beau have described inflammation of nerves more systematically than other authors. The latter has at considerable length, in his interesting memoir on the subject, directed attention to "Intercostal Neuritis."[3] Reference has been made to the occurrence of a rheumatic or gouty Neuritis. Dr. G. B. Wood considers it to be highly probable that in a large proportion of cases rheumatism lies at the foundation of the disease.[4] And Dr. Garrod, while admitting, according to the usually received notion, that the nervous affections occurring in connection with gout are generally functional, believes them sometimes to be dependent on inflammatory action, which, he adds, appears, so far as can be ascertained, to have the character of true gouty inflammation.[1]

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[1] A Manual of Pathological Anatomy, by Carl Rokitansky. Sydenham Society's Translation, vol. iii. p 462.

[2] Lehrbuch der Nervenkrankheiten des Menschen. Neuralgie des Huftnerven.

[3] Valleix, Guide du Médecin Praticien, t. iv. p. 299; also Traité des Névralgies. Beau, Archives Générales de Médecine, 4e série, t. xiii. 1847.

[4] A Treatise on the Practice of Medicine, vol. ii. p. 843.

The most characteristic symptom of Neuritis is pain, not limited to the precise seat of the inflammation, but felt in the course of the nerve, and sometimes to its minutest branches. Besides its severity, the pain in Neuritis possesses other distinctive features; it is darting, and tingling, and there often accompanies it a feeling of numbness. The pain has been further described as intermittent, but is more probably remittent, being, as long as the disease continues, never entirely absent. Tenderness over the affected nerve invariably exists. It is possible that in some forms of local palsies (*see* Local Paralysis from Nerve Disease) the loss of power, partial or complete, as well as the existence of various morbid sensations, of which formication is one, and perhaps the most common, is due to disorganization or other permanent change in the trunk of a nerve, resulting from inflammatory action.

It seems to be generally admitted that the nerve most liable to such change is the sciatic: but the various branches of the brachial plexus, and especially the ulnar nerves, likewise suffer; and so in all probability do at times the other nerves in both lower extremities and trunk.

That inflammation may also attack the nerves of special sense, as Dr. Wood has conjectured, seems not improbable, particularly the nerves of hearing and of sight. Most assuredly a true gouty inflammation, apparently commencing, in some cases, in the nerves themselves, not unfrequently either damages or entirely destroys one or other of the delicate organs connected with these most important functions.

In the treatment of Neuritis the probable alliance of the affection with some peculiar diathetic condition, the gouty or rheumatic, or possibly with the syphilitic cachexia, must not be lost sight of.

Local abstraction of blood, and the application of emollient and anodyne poultices, rest, low diet, and the use of laxatives, are the chief remedies in cases of the acute Neuritis. When the disease is chronic, the use of blisters, issues, and even the cautery, have been recommended. Internally, besides opium or other narcotic for the relief of pain, it will be prudent to give a fair trial in both the acute and chronic Neuritis to quinine, and colchicum, the iodide and the bromide of potassium.

NEUROMA (Tumour of Nerve).—Growths of various sizes and natures occurring in the course of nerves had been described before the term Neuroma came to be applied to such. Dr. Robert Smith, in his valuable and elaborate memoir, makes a brief reference to the early history of the subject;[2] and so likewise does Mr. William Wood, in his important papers entitled, "Observations on painful Subcutaneous Tubercle," and "On Neuroma."[3] The famous English surgeon, William Cheselden, is specially mentioned as having given the first accurate account of the nervous tubercle, which has become familiar chiefly through the writings of Mr. wood. "Immediately under the skin, upon the shin bone, I have twice seen little tumours, less than a pea, round and exceeding hard, and so painful that both cases were judged to be cancerous: they were cured by extirpating the tumour. But what was more extraordinary was a tumour of this kind, under the skin of the buttock, small as a pin's head, yet so painful that the least touch was insupportable, and the skin for half an inch round was emaciated: this, too, I extirpated with so much of the skin as was emaciated, and some fat. The patient, who before the operation could not endure to set his leg to the ground, nor turn in his bed without exquisite pain, grew immediately easy, walked to his bed without any complaint, and was soon cured." The same writer describes and figures the cystic neuroma. "A tumour formed in the centre of the cubital (ulnar) nerve, a little above the bend of the arm; it was of the cystic kind, but contained a transparent jelly; the filaments of the nerve were divided and ran over its surface. This tumour occasioned a great numbness in all the parts that nerve leads to, and excessive pain upon the least touch or motion. This operation (for the removal of the tumour) was done but a few weeks since; the pain is entirely ceased, the numbness a little increased, and the limbs as yet not wasted."[1]

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[1] The Nature and Treatment of Gout and Rheumatic Gout, p. 517.

[2] A Treatise on the Pathology, Diagnosis, and Treatment of Neuroma. Dublin, 1849.

[3] Transactions of the Medico-Chirurgical Society of Edinburgh, vol. iii. pp. 317 and 367.

The term Neuroma, or rather *Neuromes*, was first employed by M. Odier of Geneva. "Enfin," writes Odier, "on peut donner le nom de Neuromes à ces tumeurs mobiles, circonscrites et profondes, qui sont produites par le gonflement accidentel d'un nerf, à l'extrémité duquel la compression de la tumeur fait éprouver des crampes très pénibles."[2]

There have been various classifications of neuromatous tumours attempted by pathologists, such as local and general—that is, as affecting one nerve, or several nerves; and, again, those which are the direct consequence of a morbid process, and those resulting from an original vice of conformation. Dr. Smith, rejecting these divisions, has suggested, as sufficient for practical purposes, that Neuromata should be considered as of two kinds: 1st, of spontaneous origin, or *Idiopathic;* 2d, as the result of wounds or other injuries of the nerves, and there fore *Traumatic.*

Before offering a brief description of these varieties, it may be well to direct attention a little more fully to the *painful subcutaneous tubercle*, which we have the authority of Dr. Hughes Bennett and other pathologists for stating "must be referred to this class of tumours,"[3] that is, neuromatous fibrous tumours.

"Although," remarks Dr. Smith, "pathologists have hitherto failed to discover anything like nervous structure in these tumours, I still incline to the opinion that they are connected with the minute filaments and ultimate ramifications of the nerves. Upon any other supposition it is, I conceive, impossible to offer a rational explanation to account for the dreadful severity of the sufferings which they induce." Mr. Paget, who has carefully examined the "painful subcutaneous tumours," describes them as being formed of "either fibro-cellular or fibrous tissue, in either a rudimental or a perfect state." Alluding to a case described by the late Professor Miller, in his "Principles of Surgery," and by Professor Bennett, the same pathologist admits that their structure may sometimes be fibro-cartilaginous.[1]

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[1] The Anatomy of the Human Body, 12th edit., London, 1784, pp. 136 and 256.

[2] Manuel de Médecine. Pratique ou Sommaire d'un Cours gratuit, donné en 1800, 1801, et 1804, aux Officiers de Santé du département du Léman, par Louis Odier, Paris, 1811, p. 362.

[3] Clinical Lectures on the Principles and Practice of Medicine. 3d edit. p. 171.

Of this affection the first detailed account was given by the late Mr. William Wood, of Edinburgh. After the publication of Mr. Wood's earlier papers,[2] cases were recorded by different observers, and in 1829 an instructive *résumé* of the whole subject was laid by him before the Medico-Chirurgical Society of Edinburgh, and appeared, as already mentioned, in its "Transactions."

This disease consists in the formation of a small lump or tubercle seated in the subcutaneous cellular tissue, immediately under the integuments, which retain their natural appearance. The tubercle is met with in different parts of the body, but most frequently in the extremities. It is extremely small, pisiform in shape, of firm consistence, and apparently quite circumscribed.

The characteristic feature of the disease is the occurrence of violent pain coming on paroxysmally. The paroxysms vary in duration from ten minutes to upwards of two hours, their frequency as well as intensity appearing to increase in precise relation to the length of time the disease has existed. Some patients enjoy intervals of relief from pain for days or even weeks, while others have repeated attacks in the course of a single day. The paroxysms of pain frequently occur when the patient has fallen asleep. They are also apt to be excited by various external causes, such as pressure and blows; while in rarer instances mental disquietude and atmospheric changes have been their only apparent occasion.

Females are more frequently the subjects of this disease than males. Wood, referring to thirty-five cases collected by him, mentions that twenty-eight were females, five males; and in the account of two the sex was not stated. Of thirteen cases quoted by Descot, ten occurred in females, and three in males. Romberg has met with three instances, all in females.

The situation of the tubercle in the thirty-five cases referred to by Wood was as follows: in the lower extremities in twenty-two, in the upper extremities in eleven, in the chest in one, and in one in the scrotum. In only two of these cases was there more than one tubercle present.

This disease does not seem to be intimately connected with any particular period of life, as it has been noticed at all ages from thirteen to above seventy.

"It is a happy circumstance that this very painful affection is capable of being remedied by a very simple operation. The tubercle is easily removed by a single incision, and it is unnecessary to take away any portion of the integuments, or of the surrounding cellular tissue. No bad effect can follow the removal of the little body."—*Wood.*

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[1] Lectures on Surgical Pathology, vol. ii. p. 123.

[2] The Edinburgh Medical and Surgical Journal, 1812. Two articles, pp. 285 and 429.

Although this subcutaneous tubercle has been considered as a variety of Neuroma, it must be held in remembrance that, its distinct connection with branches of nervous trunks never having been determined, this is more a matter of inference than of demonstration. Ollivier and Rayer together carefully dissected the tumour in a case to which reference is made in his latest paper by Wood, and the result is thus expressed: "Extérieurement il était enveloppé de tissu cellulaire, dans lequel nous ne pûmes distinguer aucun filet nerveux, même à l'aide d'une forte loupe."[1] Paget remarks that the general opinion is against the supposition of the intimate connection of these painful tumours with nerves. "Dupuytren," he writes, "says that he dissected several of these tumours with minute care, and never saw the smallest nervous filament adhering to their surface. I have sought them with as little success with the microscope. Of course I may have overlooked nerve-fibres that really existed. It is very hard to prove a negative in such cases; and cases of genuine Neuroma, *i.e.*, of a fibrous tumour within the sheath of a nerve, do sometimes occur, which exactly imitate the cases of painful subcutaneous tumour."

We have now to consider the first of the two forms of Neuroma, as distinguished by Smith, and now generally recognized, namely, the *Idiopathic Neuroma.* Tumours of this nature are of an oval or oblong form, their long axis corresponding with the direction of the nerve to which they are attached. They vary considerably in size. One figured in his work by Smith is as small as a grain of wheat, while another is as large as a good-sized melon. Between these two extremes every variety of size occurs. There may be only one, or several may be found on the same nerve; occasionally they are found simultaneously upon all the spinal nerves. "In number," says Rokitansky, "they vary from one until they are almost countless." A remarkable general disease is thus constituted, of which three cases have been observed in the Vienna Hospital. Neuromata are comparatively rare in the ganglionic system. But although occurring most frequently on the spinal nerves, neuroma is not limited to them; the cerebral nerves, motor as well as sensory, particularly those most closely resembling the nerves of the cord, present at times the same tumours.

In general, neuromata are solid throughout their entire structure but in some instances are of cystic formation, as in the case recorded by Cheselden, and already referred to. These tumours are of slow growth, but continue to undergo a steady increase in size, although many years may elapse before they attain such dimensions as to prove a source of serious inconvenience. They are movable in the transverse direction, but not in the course of the nerve upon which they are seated. There may be a difficulty in distinguishing tumours which are merely contiguous to nerves from the true Neuroma, having its origin within the neurilemma. Wood has specially alluded to this difficulty in diagnosis, and Smith has pointed out that the non-nervous tumours, unlike Neuromata, are generally movable in all directions, and when drawn away from the nerve, cease to be painful on pressure.

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[1] Traité théorétique et pratique des Maladies de la Peau, seconde édit., t. ii. p. 290. Paris, 1835.

Nerve tumours are described by Rokitansky as lying between the fasciculi of the nerves, and interwoven with their neurilemmatous sheath. Neuroma, the same pathologist observes, is never deposited in the centre of a nerve, but at its side, so that only a small part of its fasciculi is displaced; the displaced fasciculi are spread abroad and stretched over the tumour, while the greater mass of the nerve remains on the other side uninjured, and with its fibres in connection with one another.

The solid neuromatous swellings are of a tough elastic consistence, of grayish or pale yellowish-red colour, and are invested with a distinct fibrous sheath. Dr. Hughes Bennett thus describes them: "On being minutely examined, they are found to consist of fibrous texture more or less dense, the filaments often arranged in wavy bundles running parallel to each other, but occasionally assuming a looped form, or intercrossing with each other. I have also found them to contain groups of cells. Not unfrequently they are fibro-cartilaginous; sometimes with the cells closely aggregated together, and at others widely scattered. In some of the neuromatous swellings described by Dr. Smith I found the fibrous tissue to present wavy bundles, among which a few granule and cartilage cells were scattered and shrivelled, apparently from the action of spirit."[1]

Neuromata seldom contract adhesion to the investing integuments, unless they have been subjected to continued pressure. Smith has never known them to suppurate, or to be removed by absorption. Pain has been generally considered to be a characteristic feature of neuromatous swellings. In this respect, however, there is infinite variety. When a single Neuroma exists, there is almost invariably much suffering. The pain, moreover, occurs suddenly and paroxysmally, darting along the nerve with the violence and instantaneousness of an electric shock. On the other hand, in those examples of Neuroma which are distinguished by the number of the tumours it is not uncommon to find these occasioning little or no inconvenience to the patient.

It is exceedingly difficult to determine with anything like exactness the real cause of the paroxysmal attacks and sudden aggravation of severe pain which occur in this as well as in many other forms of disease of the nervous system. Mental emotions and the ordinary atmospherical vicissitudes have been generally assigned as the occasion of these occurrences in Neuroma.

Paget has some very interesting observations on the cause of pain in

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[1] Loc. cit., p. 171.

Neuroma, as well as on the nearly entire absence of all suffering which has been noticed in some cases; and founding on the observations of Smith and others, including himself, this excellent writer is no doubt correct when he states, "that we cannot assign the pain in these cases entirely to an altered mechanical condition of nerve-fibres in or near the tumour. We must admit, though it be a vague expression, that the pain is of the nature of that morbid state of the nerve force which we call *neuralgic.* Of the exact nature of this neuralgic state, indeed, we know nothing; but of its existence as a morbid state of nerve-force, or nervous action, we are aware in many cases in which we can as yet trace no organic change, and in many more, in which the sensible organic change of the nerves is inadequate to the explanation of the pain felt through them." In short, Paget argues for the pain being functional, and not necessarily dependent at least on an organic disorder. If such pain is found to be influenced by the remedies chiefly available for the relief of ordinary neuralgia—quinine, iron, arsenic, belladonna, stramonium, the bromide of potassium—this suggestion will receive corroboration.

We now know that such Neuromata as are the seat of severe pain and of continual irritation may give rise to attacks of the so-called sympathetic epilepsy. Instances of this nature are to be found in the writings of several authors, and it is sufficient here to refer to the well-known views of Brown-Séquard respecting the exciting causes of the epileptic convulsion, and of many other nervous affections.[1]

In the idiopathic form of Neuroma the pain is generally limited to the parts below the tumour; and the sign of the true Neuroma, signalized by Aransoohn, has been accepted by others—namely, that when the trunk of the nerve is compressed above the tumour the pain ceases, and then the Neuroma, previously acutely sensitive, can be touched without any uneasiness being caused. The remark already made as to the solid variety of Neuroma not being necessarily painful applies likewise to the fluid or cystic tumour.

Our knowledge of the determining causes of Neuroma cannot be said to have advanced since the period when the important treatise of Dr. Smith first appeared, and we are still compelled to adopt his expression, "I feel it must be confessed that we know nothing with certainty regarding the causes of Neuroma."[2]

Neuromatous tumours have been frequently removed along with the corresponding portion of the nerve on which they were situated; and such operations, while entirely relieving the patients from suffering, have not been succeeded by any considerable loss of sensibility, or of the power of voluntary movement, in the parts supplied by even large nerves.

The sciatic nerve may be divided, as in a case of severe neuralgia of that nerve, by M. Malagodi, and a portion of it excised, without permanently destroying the functions of the limb.

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[1] Researches on Epilepsy, p. 35; also Course of Lectures on the Physiology and Pathology of the Central Nervous System, p. 181. Article, Neuroma, by the same Author, in Holmes's System of Surgery, vol. iii. p. 896.

[2] Loc. cit., p. 5.

The magnitude of the nervous trunk, which is the seat of the disease, will of course largely determine the period at which complete or partial restoration of the function in the limb is established. In some cases a few months, in others a year and upwards, have elapsed; but sooner or later, in all recorded instances, the banished sensibility and motor power have been regained.

The interference with the calorific function of the nervous system is strikingly exhibited in cases of operation for Neuroma. Mr. Adams and Dr. Smith have drawn attention to the diminution of temperature in the limb after the removal of the tumour, and with it a portion of nerve—a diminution readily noticed both by patients and operator, and which has lasted for a lengthened period, even after the restoration of the other functions.

It may then be concluded that when idiopathic Neuroma is seated in the hand, forearm, or upper arm (the positions in which it has most commonly been found), the operation for removal may be safely practised. It is possible that a similar plan might be adopted in the case of Neuroma in the lower extremity; but it is on record that amputation of the limb has been had recourse to by Chelius, in a case of nervous tumour occupying the popliteal space and stretching to nearly the centre of the back of the thigh. This was an illustration; and there are others which teach a similar lesson, of the disease having been permitted to attain a very large size—so large as to prevent any attempt being made for its simple removal.

TRAUMATIC NEUROMA.—Under this division are to be included tumours of nerves resulting from any form of mechanical injury, such as wounds, blows, pressure, or following amputation.

Traumatic Neuroma is almost invariably single. The tumour is the seat of intense pain, which, unlike the suffering in the idiopathic form of the disease, is not confined to the growth itself, or felt merely by the parts below it, but is frequently found extending along the nerve towards its origin. When Neuroma occurs as a consequence of a wound of nerve, it usually consists of a solid tumour, not invested in neurilemma, and destitute of any distinct capsule.[1] It is most likely to form when the nervous cord has been cut, but not entirely divided; and cases of this nature are even more than ordinarily painful.

The following case is published by Mr. Wood in his "Memoir on Neuroma;" it occurred in the practice of Mr. Syme:—

"James Muir, aged 43. 30*th June*, 1828.—On the inner side of the left knee, about a hand-breadth above the joint, there is a narrow depressed cicatrix, two inches long. Between this cicatrix and the sartorius there is a small tumour, about the size of an almond, and of very firm consistence. When the limb is extended, this tumour can hardly be perceived, being then overlapped by the sartorius; but when the knee-joint is bent, it can be felt very distinctly. It is most movable in a lateral direction, but seems pretty firmly connected to the subjacent parts by condensed cellular substance.

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[1] Smith, loc. cit., p. 20.

"The patient states that the tumour is always painful when pressed, but is more so at one time than another. The pain is not confined to the part, but shoots all over the knee, and sometimes extends from the groin to the toes. He observes that the pain is more severe during cold or damp weather. It frequently, for days together, prevents him from walking, or even resting on the limb. His story is, that when a boy, about eleven years old, he strained his knee by jumping into a saw-pit, which led to the formation of a large abscess that opened on both sides of the knee, namely, at the part where the cicatrix above mentioned still remains, and exactly opposite, where also there is a similar cicatrix. Several small bits of bone were discharged, and at the end of two years he got quite well. For the following twenty-seven years he led an active life; ten of them were spent in a militia regiment. About eight years ago he strained his knee while walking in his garden, and thereafter became subject to flying pains about the joints. These pains induced him to rub the knee frequently; and in doing so, about two years ago, he noticed the tumour. It was then the size of a pea, and has gradually enlarged. The disagreeable symptoms also have become greatly aggravated; and, as he refers them all to the tumour, he is desirous of having it removed.

"12*th July.*—Mr. Wood (continues Mr. Syme), who was kind enough to examine the patient, having agreed with me that the tumour was seated on or in the nervus saphenus, and that it ought to be removed, I performed the operation, with his assistance, on the 1st of July.

"The tumour being divided showed a firm fibrous capsule containing a soft brownish-white pulpy matter. The nerve was traced into the tumour, but not through it. The patient made a good recovery, and remains free from his complaint."[1]

The foregoing case illustrates the proper treatment of Traumatic Neuroma, which is to excise the tumour with the corresponding portion of nerve, in every case when its situation will permit of this being done.[2]

The last form of Neuroma which requires any separate consideration is that succeeding to amputations. Smith remarks in regard to such, that "their existence is so constant that we may, perhaps, consider them as representing the normal condition of the ends of the nerves in stumps." Generally they cause no uneasiness whatever; but on the other hand, they have occasionally been the occasion of severe neuralgia, occurring in paroxysms of great length.

The Neuroma of stumps varies in size, being in some instances not larger than a garden-pea, in others as large as a grape, or even plum. Such Neuromata are generally of an oval or oblong form, of grayish-white color, and of a firm dense texture.

The situation of the Neuroma in the stump is not always the same; it may be several inches above the surface of the latter, and be connected with the cicatrix by means only of a fibrous cord, itself destitute of any nervous structure.

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[1] Loc. cit., p. 426.

[2] Smith, p. 22.

It is the opinion of some pathologists, that the Neuromata, succeeding amputation are produced by the pressure which is exerted upon the surface of the stump. An objection fatal to this explanation, however, has been advanced—namely, that in many stumps which have never been subjected to pressure these little tumours are found.

Dr. Smith believes their formation to be for the protection of the extremity of the nerve.

IV.

NEURALGIA.

By Francis Edmund Anstie, M.D., F.R.C.P.

Definition.—A disease of the nervous system manifesting itself by pains, nearly always unilateral, which appear to follow the course of particular sensory nerves. The pains are usually sudden in their commencement, and of a darting, stabbing, boring, or burning character; they are at first unattended with any local change which can be recognized, or by any constitutional pyrexia. They are always markedly intermittent; sometimes regularly and sometimes irregularly so. The periods of intermission are distinguished by complete freedom from acute suffering, and in recent cases, the patient appears quite well at these times. In old-standing cases, however, persistent tenderness and other signs of local mischief are apt to be developed in the tissues which surround the distribution of the nerves which are the seat of the acute pains. Severe attacks of Neuralgia are usually complicated with secondary affections of other nerves which are intimately connected with that which is the original seat of pain; and in this way congestion of bloodvessels, hypersecretion, or arrested secretion from glands, inflammation and ulceration of tissues, &c., are sometimes brought about.

Synonyms.—The word Neuralgia has a generally recognized force, and there is no equivalent to it (except foreign variations in mere terminology) which represents the whole group of disorders to which it applies, though there are numerous phrases for particular forms of the disorder.

Clinical History and Symptoms.—These vary so greatly in different cases of Neuralgia that it will be necessary to discuss the greater part of this subject under the headings of the special varieties of the disease. There are certain features, however, which are observed in all true Neuralgias.

In the first place, it is universally the case that the existing condition of the patient at the time of the first onset of the disease is one of debility, either general or special. I make this statement with great confidence, notwithstanding the contrary assertion advanced by so high an authority as Valleix, whose able[1] treatise really laid the foundation for all our accurate knowledge of the Neuralgias.

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[1] Traité des Névralgies. Paris, 1841.

In the first place, it is certainly the case that the larger half of the total number of patients coming under my care with various forms of Neuralgia are either decidedly anæmic or have recently undergone some exhausting illness or fatigue: and the reason why Valleix did not find so many cases of this type among his neuralgic patients appears certainly to be, that he limited the neuralgic class of diseases by an artificial definition, which we shall have to reject as untenable. On the other hand, although a considerable number of neuralgic patients are so far healthy in appearance, that they have a fairly ruddy complexion and a good amount of muscular strength, it is impossible to admit that these facts disprove the existence of debility, either structural or functional, *in the nervous system*, for the commonest experience teaches that such debility does not frequently coexist with a great robustness and development of the apparatus of vegetation and the lower forms of animal function. And it will invariably be found, on carefully examining these apparently robust neuralgic patients, that the nervous system has given warnings of its weakness; thus, the patient who, after an exhausting confinement, attended with great loss of blood, is attacked with obstinate *clavus hystericus*, will inform us that whenever in earlier life she had suffered from headache, the pain was always chiefly, if not altogether, confined to the nerves which are now the seat of decided Neuralgia. In a large number of cases I have also found that the attack of acute pain was immediately ushered in by a remarkably *anæsthetic* condition of the parts about to become painful; and a slighter degree of blunted sensation may often be observed in the intervals between the earlier attacks in cases of Neuralgia. In short, I have never seen a case of neuralgic pain in which there were not marked evidences of nervous debility, either local or general.

Another circumstance is common to all Neuralgias of superficial nerves; and as a large majority of neuralgic affections are superficial in situation, this is, for practical purposes, a general characteristic of the disease. I refer to the formation of *tender spots* at various points where the affected nerves pass from a deeper to a more superficial level, and particularly where they emerge from bony canals, or pierce fibrous fasciæ. So general is this characteristic of inveterate cases, that Valleix founded his diagnosis of the genuine Neuralgias on the presence of these painful points, in which assumption I think there can be little doubt that he committed an error.[1]

The third general characteristic of neuralgic affections is, that the pain is intermittent, or at the least remittent, in every stage of the disease.

The fourth general characteristic is, that fatigue and every other temporary depressing influence directly predisposes to an attack of acute pain, and aggravates it when already existent.

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[1] Trousseau insists with much energy that a still more important "point douloureux" is constantly present in Neuralgia, viz. over the spinous processes of one or more vertebræ, corresponding to the origin of the painful nerve. It is true (as the Brothers Griffin had long before pointed out), that there is *tenderness* in this situation. But this "point apophysaire" is not always, nor frequently, the seat of *spontaneous pain*.

Varieties.—It is possible to classify the Neuralgias upon either of two systems: first (A), according to the constitutional condition of the patient; and, secondly (B), according to the situation of the affected nerves. It will be necessary to follow both these lines of classification, avoiding repetitions as much as possible.

(A) In considering the influence of constitutional states upon the typical development of Neuralgia, it will be convenient to commence with (I) the group of cases in which the general state of the organism exerts the least amount of effect. This is the case where the pain is the result of direct injury to the nerve-trunk, whether by external violence, by the mechanical pressure of a tumour, or by the involvement of a nerve in inflammatory or ulcerative processes, spreading to it from neighbouring tissues. As regards the development of symptoms, the important matters are, that the pain in these cases commences comparatively gradually, that the intermissions are usually much less complete, and that the pain is far less amenable to relief from remedies than in other varieties of Neuralgia. The little that can be said about the form which is dependent upon progressively increasing pressure or involvement of a nerve in malignant ulcerations, caries of bones, or teeth, &c., falls under the heads of Diagnosis or Treatment, and need not detain us here. The clinical history of Neuralgia from external violence, however, requires separate discussion.

1. Neuralgia from external violence may be produced by a shock (as of a fall, a railway collision, &c.), which gives a jar to the central nervous system, or by severe mental emotion, operating upon the same part of the organism. Under either of these circumstances the development of the affection seldom occurs at once, but ensues after a variable interval, during which the patient exhibits symptoms of general depression, with loss of appetite and strength. Sometimes vomiting, and even, in other instances, actual paralysis of a partial and temporary kind occur. When once developed the neuralgic attacks are undistinguishable from those which occur from causes internal to the organism. The affection is usually very obstinate. In a large, number of cases the nerve or nerves affected have previously shown signs of weakness, by a tendency to painful affection in depressed states of the organism. In the greater number of instances, as far as my experience goes, it is the fifth cranial nerve which becomes neuralgic from the effects of central shock. Illustrative cases will be given in the sections on local classification.

2. Neuralgia from direct violence to superficial nerves is produced either by cutting or, more rarely, by bruising wounds.

Cutting wounds may divide a nerve-trunk, (α) partially, or (β), completely.

(α) When a trunk-nerve is partially cut through, neuralgic pain commonly occurs, if at all, immediately on the receipt of the injury. One such example only has come under my own care, but many others are recorded.[1] In this case the ulnar nerve was partly cut through with a tolerably sharp bread-knife, at a point not far above the wrist; partial anæsthesia of the little and ring fingers was induced, but at the same time violent neuralgic pains in the little finger came on, in fits recurring several times daily, and lasting for about half a minute. Treatment was of little apparent effect in promoting cure, though opiates gave temporary relief, as did the local use of chloroform. The attacks recurred for more than a month, long after the original wound had healed soundly; and for a long time after this pressure on the cicatrix would reproduce the attacks. A slight amount of anæsthesia still remained when I last saw the patient, more than a year after the injury.

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[1] Vide Lancet, 1866.

(β) Complete severance of a nerve-trunk is a sufficiently common accident, far more common than is the production of Neuralgia from such a cause; indeed, so marked is this disproportion between the injury and the special result, that I have been led to the conclusion that a necessary factor in the chain of morbid events must be the existence of some antecedent peculiarity of organization in the central origin of the injured nerve. This opinion is rendered more probable by the fact that the consecutive Neuralgia is not unfrequently situated not in the injured nerve itself, but in some other nerve with which it has intimate central connections. Two such examples are recorded in my Lettsomian Lectures,[1] in which the ulnar nerve, and one in which the cervico-occipital, respectively, were completely divided: in all three instances the Neuralgia was developed in the branches of the trigeminus. In all the cases which have come under my notice the Neuralgia, whether direct or reflex, set in at a particular period, viz., after complete cicatrization of the wound, and while the functions of the branches on the peripheral side were partly, but not completely, restored. The same obstinacy and rebelliousness to treatment was noticed as in other instances of Neuralgia from injury.

A few words must be given before quitting the subject of Neuralgia from wounds of nerves, to the cases in which a foreign body lodges, with more or less laceration, in the substance of a nerve-trunk. I have never seen such a case; but many instances are recorded in which most violent and painful Neuralgia has been set up in this way. Not unfrequently the irritation produces no noticeable effect on the nerve actually pressed upon, but sets up Neuralgia in a nerve so distant that no connection is suspected between the neuralgic pain and the original accident. The removal of a small piece of glass, or such other irritating body from the cicatrix of an old wound has in several recorded instances put an end to neuralgic pains in quite another situation, for which all manner of remedies had long been tried. Sometimes the neuralgic pain has been accompanied by tissue degeneration of an alarming character, and these have likewise ceased at once upon the removal of the peccant body which had been the unsuspected source of the evil.

Neuralgias which result from some local injuries of so peculiar a character as *gunshot wounds* scarcely fall properly within the province of this article. The reader who desires to know all that can be said with regard to this particular class of affections is recommended to study the able and carefully compiled "Report" of Messrs. Mitchell, Morehouse, and Keen.[1]

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[1] Vide Lancet, 1866.

The case of Neuralgia from injury, pressure, and local disease of nerves has been mentioned first, because this form of the disease is less influenced than others by general constitutional states. But it is an erroneous opinion, however common, that the general condition of the body is here without any influence on the development of the nerve-pain. It has been forcibly urged, by Dr. Brinton and Dr. Handfield Jones more especially, that a condition of general bodily vigour mitigates, and that constitutional debility decidedly aggravates, these forms of Neuralgia; and my own experience gives most practical proof of the justice of this argument.

(II.) *Neuralgias of intra-nervous origin.*—As regards the constitutional conditions with which the several varieties of Neuralgia that arise independently of external violence, or disease of extra-nervous tissues, are respectively allied, the following preliminary subdivision may be made:—

1. Neuralgia of malarious origin.
2. Neuralgias of the period of bodily development.
3. Neuralgias of the middle period of life.
4. Neuralgias of the period of bodily decay.
5. Neuralgias associated with anæmia and mal-nutrition.

1. *Neuralgias of malarious origin* were formerly far more prevalent than they are at present, within the sphere of the English practitioner of medicine; with the general decline of malarial fevers, consequent on improved drainage and cultivation of lands, they have become constantly more scarce. In former times, on the contrary, they were so common, that they forced themselves on the notice of every physician. The term "brow-ague," to this day applied by many medical men to every variety of supra-orbital Neuralgia, is a relic of the older experience on this point; as is also the very common mistake of expecting all neuralgic affections to present a distinctly rhythmic recurrence of symptoms.

My own experience of malarial Neuralgia has been very limited, and I may as well say all that I know of its symptoms at once. In fact, though the out-patient practice of the Chelsea Dispensary and Westminster Hospital has afforded me a considerable number of examples of ague in past years, I have only seen two undoubted and one doubtful case of malarial Neuralgia, in all of which the fifth nerve was affected. The periodicity in one of the genuine cases was regular tertian; in the other regular quotidian. An algide condition always ushered in the attacks; but this was gradually exchanged, as the pain continued, for a condition in which the pulse was rapid, soft, and bounding, and the strength was further depressed. In both of these cases there were unilateral flushing of the face, and congestion of the conjunctiva, to a slight degree, during the attack of pain. The pain became duller and more diffused contemporaneously with the lowering of arterial pressure (as estimated by Marey's Sphygmograph); and after the disappearance of active pain, moderate tenderness over a considerable tract around the course of painful nerves remained for some time. But there was no distinct development of the *painful points* of Valleix (to be hereafter described), a circumstance which I attribute to the rapid cure of the complaint, in each instance, by quinine.

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[1] Report on Gunshot Injuries to Nerves, observed in the late American War, Philadelphia, 1864.

2. *Neuralgias of the period of bodily development.*—By the "period of bodily development" is here understood the whole time from birth up to the twenty-fifth year, or thereabouts. This is the period during which the organs of vegetative and of the lower animal life are consolidating. The central nervous system is more slow in reaching its fullest development, and the brain more especially is many years later in acquiring its maximum of organic consistency and functional power.

That portion of the period of bodily development which is antecedent to puberty is but little obnoxious to neuralgic affections. From the moment when puberty arrives, however, all is changed. In the stir and tumult which pervades the organism, and especially in the enormous diversion of its nutritive and formative nisus to the evolution of the generative organs and the correlative sexual instincts, the delicate apparatus of the nervous system is apt to be overwhelmed, as well as left behind, in the race of development. Under these circumstances the tendency to neuralgic affections rapidly increases. It will, however, be seen later that there is a great preponderance of particular varieties of the disease among the cases occurring during this period.

3. *Neuralgias of the middle period of life.*—By this period is meant the time included between the twenty-fifth and about the fortieth or the forty-fifth year. It is the time of life during which the individual is subjected to the most serious pressure from external influences. The men, if poor, are engaged in the absorbing struggle for existence and for the maintenance of their families; or, if rich and idle, are immersed in dissipation, or haunted by the mental disgust which is generated by *ennui*. The women are going through the exhausting process of child-bearing, and supporting the numerous cares of a poor household in some cases, or are devoured with anxiety for a certain position in fashionable society for themselves and their children, or again they are idle and heart-weary, or condemned to an unnatural celibacy. Very often they are both idle and anxious.

It must not be supposed that there is a sharp line of demarcation between this period and the last: nevertheless it will be seen, when we come to discuss the local varieties of Neuralgia, that there are certain broad differences in the general tendencies of the two epochs. It must be noted that particular Neuralgias, which are first manifested in the development period, frequently recur, under special provocation, in the period of middle life.

4. *Neuralgias of declining bodily vigour.*—The period here referred to is that which commences with the first indications of distinct physical decay, of which the earliest that we can recognize (in persons who are not cut off by special diseases) is perhaps the tendency to atheromatous change in the arteries. The earliest development of this

symptom varies very considerably in date; but whenever it occurs it is a plain warning that a new set of vital conditions has arisen; and especially notable is its connection with the characters of the neuralgic affections which take their rise after its commencement. The period of declining life is pre-eminently the time for *severe and intractable* Neuralgias. Very few patients indeed are ever permanently cured, who are first attacked with Neuralgia after they have entered upon what may be called the "degenerative" period of existence.

Perhaps a separate heading should be reserved for those Neuralgias which are the heralds of locomotor ataxy. But they seem naturally to fall under the present class, although the nervous degeneration which produces them is chiefly in the direction of sclerosis. The character of these pains is fully described in the article on Locomotor Ataxy.

5. Neuralgias which are immediately excited by anæmia or mal-nutrition. Of the neuralgic affections which can be ranked within this group, the sole characteristic worthy of note here is the circumstances in which they arise. It would seem that conditions of anæmia and mal-nutrition simply aggravate the tendencies of existing weak portions of the nervous system to be affected with pain; just as they notoriously do aggravate lurking tendencies to convulsion and spasms.

(B.) We come now to the consideration of local varieties of Neuralgia. The primary subdivision of these may be made as follows:—

(I.) Superficial Neuralgias. (II.) Visceral Neuralgias. The superficial Neuralgias may be subdivided thus:—

(*a*) Neuralgia of the fifth (trifacial or trigeminal).
(*b*) Cervico-occipital Neuralgia.
(*c*) Cervico-brachial Neuralgia.
(*d*) Intercostal Neuralgia.
(*e*) Lumbo-abdominal Neuralgia.
(*f*) Crural Neuralgia.
(*g*) Sciatic Neuralgia.

This classification is taken from Valleix, and appears to me substantially correct.

(*a*) The most important group of Neuralgias are those of the fifth cranial nerve.

Neuralgia of the fifth nerve always exhibits itself with especial violence in certain foci, which Valleix was the first to define with accuracy. These foci are always in points where the nerve becomes more superficial, either in turning out of a bony canal, or in penetrating fasciæ. In the ophthalmic division of the nerve the following possible foci are noticeable: (1) the *supra-orbital*, at the notch of that name, or a little higher in the course of the frontal nerve; (2) the *palpebral*, in the upper eyelid; (3) the *nasal*, at the point of emergence of the long nasal branch, at the junction of the nasal bone with the cartilage; (4) the *ocular*, a somewhat indefinite focus within the *globe* of the eye; (5) the *trochlear*, at the inner angle of the orbit.

In the superior maxillary division the following foci may be found: (1) the *infra-orbital*, corresponding to the emergence of the nerve of that name from its bony canal; (2) the *malar*, on the most prominent portion of the malar bone; (3) a vague and indeterminate focus, somewhere on the line of the gums of the upper jaw; (4) the superior *labial* point, a vague and not often an important focus; (5) the *palatine* point, rarely observed, but in some recorded cases the seat of intolerable pain.

In the inferior maxillary division the foci are: (1) the *temporal*, a point on the auriculo-temporal branch, a little in front of the ear; (2) the *inferior dental* point, opposite the emergence of the nerve of that name; (3) the *lingual* point (not a common one) on the side of the tongue; (4) an *inferior labial* point, only rarely met with.

Besides these foci in relation with distinct branches of the trigeminus there is one of especial frequency, which corresponds to the *inosculation of various branches*. This is the *parietal* point, situated a little above the parietal eminence. It is small in size, the point of the little finger would cover it. It is the commonest focus of all.

Neuralgia of the fifth may attack any one, or all three of the divisions; the latter event is comparatively rare.[1] The most common is the case of its limitation to the ophthalmic division, and incomparably the most frequent foci of the pain are the *supra-orbital* and *parietal* points.

The most common of all the varieties of trigeminal Neuralgia is Migraine, or sick-headache. This is an affection which is entirely independent of digestive disturbances, in its primary origin, though it may be aggravated by their occurrence. It almost always first attacks individuals at some time during the period of bodily development. Under the influences proper to this vital epoch, and often of a further debility induced by precocious straining of the mental powers, the patient begins to suffer headache after any unusual fatigue or excitement, sometimes without any distinct cause of this kind. The unilateral character of this pain is not always detected at first; but as the attacks increase in frequency and severity, it becomes obvious that the pain is limited to the supra-orbital, and sometimes to the ocular branches of the ophthalmic division of the fifth nerve of one side. In very rare cases, however, as in all forms of Neuralgia, the nerves of both sides may be affected. If the pain lasts for any considerable time, nausea, and at length vomiting, are induced. This is followed at the moment by the increase of the severity of the pain; but from this point the violence of the affection begins to subside, and the patient usually falls asleep. The history of the attacks negatives the idea that the vomiting is ordinarily remedial. This symptom merely indicates the lowest point of nervous depression; but it may happen that a quantity of food which has been incautiously taken, lying as it does, undigested in the stomach, may of itself greatly aggravate the Neuralgia, by irritation transmitted to the medulla oblongata. In such a case vomiting may directly relieve the nerve-pain. When the patient awakes from sleep, the active pain is gone. But it is a common occurrence, indeed it always happens when the Neuralgia has lasted a certain length of time, that a *tender* condition of the superficial parts remains for some hours, perhaps for a day or two. This tenderness is usually somewhat diffused, and not limited with accuracy to the foci of greatest pain during the attacks.

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[1] It is with much diffidence that I make this statement, as it is opposed to the opinion of Valleix. But my own experience is very positive on the matter; and, besides, it appears to me that Valleix's definition of Neuralgia, which I cannot accept as sufficiently expansive, accounts for his views.

Sick-headache is not uncommonly ushered in by sighing, yawning, and *shuddering*—symptoms which remind us of the prodromata of some graver neuroses, to which it is probably related by hereditary descent.

Another variety of trigeminal Neuralgia which infests the period of bodily development is that known as *clavus hystericus; clavus* from the fact that the pain is at once severe, and limited to one or two small definite points, as if a nail or nails had been driven into the skull. These points correspond either to the *supra-orbital* or the *parietal*, sometimes both these are the seat of the pain. But for the greater limitation of the painful area in clavus, that affection would scarcely differ from migraine, for the former is also accompanied, when the pain continues long enough, with nausea and vomiting. The adjective *hystericus* is an improper and inadequate definition of the circumstances under which clavus arises. The truth is that the subjects of it are usually females who are passing through the trying period of bodily development; but there is no evidence to show that uterine disorders give any special bias towards this complaint. Both migraine and clavus are often met with in persons who have long passed the period of bodily development. But their first attacks have nearly always occurred during that period of life.

The adult or middle period of life is not, according to my experience, fruitful in *first attacks* of trigeminal Neuralgia. But when the neuralgic tendency has once been set up, there are many circumstances of middle-adult life which tend to recall it. Over-exertion of the mind is one of the most frequent; more especially when this is accompanied by anxiety and worry; indeed the latter is a more powerful cause than the former. In women, the exhaustion of hemorrhage at parturition, or of menorrhagia, and also the depression produced by over-lactation, are frequent causes of the recurrence of a migraine or a clavus to which they had been subject when young. The middle period of life is also most obnoxious, on the whole, to severe mental shocks, and also to severe bodily accident, of a kind to produce damage to the central nervous system. Special mention ought to be made in the case of women, of the disturbing influences of the great series of changes which close the middle period of their life—viz., the involution of the sexual organs. This is doubtless a very frequent cause of the resuscitation of a tendency to facial Neuralgia which had lain dormant, perhaps, for many years.

It is, however, the final, or degenerative period of life, which produces the most formidable varieties of facial Neuralgia. Neuralgias of the fifth which have previously attacked an individual, may recur at this time of life without any special character except a certain increase of severity and obstinacy. But trigeminal Neuralgias which now occur for the first time are usually intensely severe and utterly incurable. These cases correspond with the affection named by Trousseau, "tic épileptiforme," and it is of them, doubtless, that Romberg is speaking, when he says that the true Neuralgias of the fifth rarely occur before the fortieth year of life. These affections are distinguished by the intense severity of the pain, the lightning-like suddenness of its onset, and the almost total impossibility of effecting more than the most temporary improvement in the symptoms. But they are also distinguished by another circumstance which too often escapes attention; namely, they are almost invariably connected with a family taint of insanity, and very often with strong melancholy and suicidal tendencies in the patient himself, which do not depend on, nor are commensurate in their development with, the intensity of the pain which he suffers. They are further remarkable for the frequency with which they are attended with two special complications—viz., muscular spasms, and the formation of exquisitely tender points, the least pressure on which is enough to cause the most violent agony. Often, a mere breath of wind impinging on them will produce a like effect. The history of these cases is most wretched; the unfortunate patient may survive for years before he completely succumbs to exhaustion; yet every hour of his life is a misery. The act of masticating usually causes intolerable darts of agony, and nutrition is often obliged to be kept up by liquids. If mere broth and slop diet be adhered to, there is probably under-nutrition which aggravates the Neuralgia. And if, as often happens, the patient flies to drink as a relief, that again hastens the degeneration of the nervous centres, and renders the case more hopeless of cure than ever.

(*b*) *Cervico-occipital Neuralgia.*—As Valleix has remarked, there are several nerves (in fact the posterior branches of all the first four spinal pairs) which are more or less capable of being the seat of this affection. But amongst them all there is none comparable to the great occipital, which arises from the second spinal pair, for the frequency and importance of its Neuralgic affections. This nerve sends branches to the whole occipital and the posterior parietal region. On the other hand, the second and third spinal nerves help to make up the superficial cervical branch of the cervical plexus, which is distributed to the triangle between the jaw, the median lines of the neck, and the edge of the sterno-mastoid, and those to the lower part of the cheek. Then there is the auricular branch, which starts from the same two pairs, and supplies the face, the parotid region, and the back of the external ear. Then, the small occipital, distributed to the ear and to the occiput. And finally there are the superficial descending branches of the plexus. These, altogether, are the nerves which at various points, where they become more superficial, form the foci of cervico-occipital Neuralgia.

The most typical example of this form of Neuralgia which has fallen under my own notice, occurred (after exposure to cold wind) in a lady about sixty years of age, who had all her life been subject to Neuralgic headache, approaching the type of migraine, and who came of a family in which insanity, apoplexy, and other grave neuroses had been frequent. The pain centred very decidedly in a focus corresponding to the occipital triangle of the neck. It recurred at irregular intervals, and in very severe paroxysms, and was entirely unaffected by any remedies, till *blistering* was tried, when it yielded at once. About twelve months later this patient suffered a severe hemiplegic attack of paralysis.

The tendency, however, of cervico-occipital Neuralgias is certainly to spread towards the lower portions of the face, as observed by Valleix; in this case they become, sometimes, undistinguishable from Neuralgias of the third branch of the fifth. In the early stages of the disease, if the physician had been lucky enough to witness them, the true place of origin of the malady would have been easily discernible; at a later date it requires great care, and a very strict interrogation of the patient, to discover the true history of the disease.

Experience is too limited, *if* I am to judge by my own and that of the standard authors, to allow us to say anything of the conditions, as to age and general nutrition of the organism which specially favour cervico-occipital Neuralgia. Apparently, however, there is good reason for thinking that the immediately exciting cause of it is most frequently *external cold.* And I am inclined to think also that it is seldom a primary Neuralgia, but occurs usually in subjects who have already experienced other forms.

(*c*) *Cervico-brachial Neuralgia.*—This class includes all the Neuralgias which occur in nerves originating from the brachial plexus, as from the posterior branches of the four lower cervical nerves. The most important characteristic of the Neuralgias of the upper extremity is the frequency, indeed almost constancy, with which they invade simultaneously or successively several of the nerves which are derived from the lower cervical pairs. The neuralgic affections of the small posterior branches (distributed to the skin of the lower and back part of the neck) are comparatively of slight importance. But the "solidarité," which Valleix so well remarked, between the various branches of the brachial plexus, causes the Neuralgias of the shoulder, the arm, forearm, and hand to be extremely troublesome and severe, owing to the numerous foci of pain which usually exist. Perhaps Valleix's description of these foci is somewhat fanciful and over-minute; but the following among these which he mentions I have repeatedly identified: (1) an *axillary* point, corresponding to the brachial plexus itself; (2) a *scapular* point, corresponding to the inferior angle of the scapula. (It is difficult to identify the peccant nerve here: the one to which it apparently corresponds, and to which Valleix refers it, is the sub-scapular; but we are accustomed to think of this as a motor nerve). Still it is certain that pressure on a painful point existing here will often cause acute pain in the nerves of the arm and forearm. (3) A *shoulder* point, which corresponds to the emergence, through the deltoid muscle, of the superficial filets of the circumflex; (4) a *median-cephalic* point, at the bend of the elbow, where a branch of the musculo-cutaneous nerve lies immediately behind the median cephalic vein; (5) an *external humeral* point, about three inches above the elbow, on the outer side, corresponding to the emergence of the cutaneous branches which the musculo-spiral gives off as it leaves the groove in the humerus; (6) a *superior ulnar* point, corresponding to the course of the ulnar nerve, between the olecranon and the epi-trochlea; (7) an *inferior ulnar* point, where the nerve passes in front of the annular ligament of the wrist; (8) a *radial* point, making the place where the radial nerve becomes superficial at the lower and external aspect of the forearm. Besides these foci, there are sometimes, but more rarely, painful points developed by the side of the lower cervical vertebræ, corresponding to the posterior branches of the lower cervical pairs.

The most common seat of brachial Neuralgia in my experience has been the ulnar nerve; the superior and inferior points above mentioned being the foci of greatest intensity; an axillary point has also been developed in one or two instances which I have seen. Rarely, however, does the Neuralgia remain limited to the ulnar nerve, in the majority of cases it soon spreads to other nerves which emanate from the plexus. A very common seat of Neuralgia is also the shoulder, the affected nerves being the cutaneous branches of the circumflex. I am inclined to think, also, that affections of the musculo-spiral and of the radial near the wrist are rather common, and have found them extremely obstinate and difficult to deal with. One case has recently been under my care in which the foci of greatest intensity of pain were an external humeral, and a radial point; but besides this there was an exquisitely painful scapular point. In another instance, the pain commenced in an external humeral and a radial focus; but subsequently the shoulder branches of the circumflex became involved. A most plentiful crop of herpes was an intercurrent phenomenon in this case.

Median cephalic Neuralgia is an affection which used to be comparatively common in the days when phlebotomy was in fashion, the nerve being occasionally wounded in the operation. I have only seen it in connection with this cause; that is to say, as a well-marked affection. One such instance has been under my care. But a slight degree of it is not uncommon, as a secondary symptom in Neuralgia affecting other nerves. The traumatic form is excessively obstinate.

In the Neuralgias of the arm we begin to recognize the etiological characteristic which distinguishes most of the neuralgic affections of limbs, namely, the frequency with which they are aggravated, and especially with which they are kept up and revived, when apparently dying out, by *muscular movements*. In the case above referred to of Neuralgia of the sub-scapular, musculo-spiral (cutaneous branches), and radial, the act of playing on the piano for half an hour immediately revived the pains in fullest force, when convalescence had apparently been almost established.

The liability of particular nerves in the upper extremity to Neuralgia, from *external injuries*, requires a few words. The nerve which is probably most exposed to this is the ulnar. Blows on what is vulgarly called the funny bone are not uncommon exciting causes of the affection in predisposed persons: and cutting wounds of the ulnar a little above the wrist are rather frequent causes. The deltoid branches of the circumflex, and the humeral cutaneous branches of the musculo-spiral, are much exposed to injury. The radial nerve near the wrist is very much exposed both to bruises and to cutting wounds. So far as I know it is only when a nerve-trunk of some size is injured that Neuralgia is a probable result. Wounds of the small nervous branches in the fingers, for instance, are very seldom followed by Neuralgia. I have no statistics to guide me as to the effect of long-continued *irritation* applied to one of those small peripheral branches; but it is probable that that might be more capable of inducing Neuralgia. As far as my own experience goes, however, it would appear that a more common result is *convulsion* of some kind, from reflex irritation of the cord.

(*d*) *Dorso-Intercostal Neuralgia.*—This form of Neuralgia has of late years assumed a position of much interest, in consequence, chiefly, of its rather frequent association with unilateral herpes, a circumstance which has considerably helped to elucidate the pathology of the latter disease.

This disease is surrounded with considerable diagnostic difficulties. Some of these will be discussed under the heading of Diagnosis in part; but a few words must be given to them here. The disorder with which it is especially liable to be confounded is that for which Dr. Inman invented the term Myalgia, and which is represented in different localities by the affections called in old-fashioned phrase pleuro-dynia, lumbago, and (more generally) by the very inaccurate term muscular rheumatism (there being no respectable evidence whatever to connect it specially with the rheumatic diathesis). The principal feature by which dorso-intercostal Neuralgia can be separated from myalgia is its history; viz., its non-dependence, or much less dependence on *excessive or long-continued local muscular action* than the latter complaint exhibits. There is also a marked *intermittence* in the neuralgic affections. Finally, though this only applies to a limited number of cases, the intercurrence of *herpes* is a decided diagnostic of the neuralgic character of the disease.

Dorso-intercostal Neuralgia is an affection of certain of the dorsal nerves. These nerves divide immediately after their emergence from the intervertebral foramina into a posterior and an anterior branch. The former sends filaments which pierce the muscles, to be distributed to the skin of the back; the latter, forming the intercostal nerves, follow the intercostal spaces. Immediately after their commencement the intercostal nerves communicate with the corresponding ganglia of the sympathetic. Proceeding outwards they at first lie between the pleura and intercostal muscles; towards the angles of the ribs they pass between the two layers of intercostal muscles, and, after giving branches to the latter, give off their large superficial branch. In the case of the seventh, eighth, or ninth intercostal nerves, which are those chiefly liable to Neuralgia, the superficial branch is given off about midway between the spine and sternum. The final point of division, at which superficial filets come off, in all the eight lower intercostal nerves, is nearer to the sternum, and is progressively nearer to the latter in each successive space downwards. There are thus, as Valleix observes, three points of division: 1, at the inter-vertebral foramen; 2, midway in the intercostal space; 3, near to the sternum.

And there are three sets of superficial branches (reckoning the posterior primary division) which make their way towards the surface near these points.

In one of its forms, intercostal Neuralgia is one of the commonest of all neuralgic affections. I refer to the pain beneath the left mamma, which women with neuralgic tendencies so often experience, chiefly in consequence of over-lactation, but also from exhaustion caused by menorrhagia, and especially from the concurrence of this cause with the preceding one. Some care must be taken to distinguish this from the mere myalgic pain, which is produced by over-working the pectoral muscles in proportion to the existing state of their nutrition, and also by the vague conditions grouped under the name "Hysteria." The latter sort of pain is more diffuse in extent, and less markedly intermittent, than Neuralgia, and its history is different: and the effect of *rest* is far more marked in the former than in the latter.

It is only of recent years that the Neuralgia which had often been observed to attend herpes zoster has been even thought of as essentially connected with the latter disease. It is to M. Notta that some of the earliest observations leading to the latter view are to be attributed. But the matter was much more fully discussed by M. Barensprung, in a paper published in 1861.[1] This author showed the absolute universality with which unilateral herpes, wherever developed, closely followed the distribution of some superficial sensory nerve, and gave reasons, which will be discussed hereafter, for supposing that the disease originates in the ganglia of the posterior roots, and that the irritation spread thence to the posterior roots in the cord, causing reflex Neuralgia. This theory will be discussed further. Meantime, it seems to be established, by multiplied researches, that though unilateral herpes may, and often does, occur without neuralgia and neuralgia without herpes, the concurrence of the two is due to a mere extension of the original disease, which is a nervous one.

In young persons zoster is not often attended with severe *Neuralgia*, but a curious half-paretic state of the skin, in which numbness is mixed with formication, or with a sensation as of boiling water under the skin, precedes the outbreak of the eruption by some hours, or even a day or two. Painless herpes is commonest in youth. From the age of puberty to the end of life the tendency of herpes to be complicated with Neuralgia becomes progressively stronger. The course of events is different in different cases, however. Usually, in adult and later life, the symptoms *commence* with a more or less violent attack of neuralgic pain, which is succeeded, and for the time usually (though not always) displaced, by the herpetic eruption. This latter runs its course, and after its disappearance the Neuralgia very commonly returns again. In old people the *after*-Neuralgia is often distressingly severe, and most rebellious to treatment. Six weeks or two months is quite a common period for it to last, and in some aged persons it has been known to fix itself permanently, and cease only with life. In elderly subjects a further complication sometimes occurs. The herpetic vesicles leave obstinate and most painful ulcers behind them, which refuse to heal, and worry the patient frightfully, the merest breath of air upon them sufficing to cause agonizing darts of neuralgic pain. I have known one patient distinctly killed by the exhausting agony thus caused.

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[1] Annalen der Charité Krankenhauses zür Berlin, ix. 2, p 40. Brit. and For. Med. Rev., January, 1862.

The foci of pain in intercostal Neuralgia are always found in one or more of the points, already mentioned, at which sensory twigs become superficial. In long-standing cases acutely tender spots are developed; not unfrequently the most decided of these are where they are too seldom sought for, namely, opposite the emergence from the intervertebral foramen.

(*e*) *Dorso-lumbar Neuralgia.*—The records of this affection are as yet in a state of considerable confusion. What has been done with any precision towards clearing up the history of the disease, related chiefly to the neuralgic affections of the pelvic organs in women; and to the Neuralgia of the testis in men, which will be treated of in a different place.

The principal foci of dorso-lumbar Neuralgia, when this affects external parts, are as following: (1) the *vertebral* points, corresponding to the posterior branches of the respective nerves; (2) an iliac about the middle of the crista ilii; (3) an *abdominal* point, in the hypogastric region; (4) an inguinal point in the groin near the issue of the spermatic cord, from whence the pain radiates along the latter; (5) a *scrotal* or *labial* point, situated in the scrotum, or in the labium majus.

Such is the description given by Valleix; and as I have seen but few examples of the external forms of dorso-lumbar Neuralgia I can only rely upon his observation. The few severe cases of this kind of Neuralgia, which I have observed, have been distinguished by foci in the vertebral region, and over the crista ilii; in two of these there were also distinct foci in the spermatic cord and testicle. In one patient there was an apparent focus of pain higher up in the groin also; but this man is a confirmed hypochondriac, and his morbid sensations are so shifting as to be very unreliable in their indications.

(*f*) The next group of Neuralgias which must be described is the crural. This, after all, includes very few independent cases. There are very few primary Neuralgias of the crural nerve; Valleix had only seen two in his very large experience, and I cannot say that I have seen any. Neuralgia of the crural nerve is almost always a secondary affection, arising in the course of Neuralgia, which primarily showed itself in the external pudic branch from the plexus.

(*g*) The last, and one of the most important and numerous groups of external Neuralgias are the femoro-popliteal, or Sciatic.

Sciatica is a disease from which youth is comparatively exempt. Valleix had collected 124 cases; and in not one was the patient below the age of seventeen; only 4 were below twenty. In the next decade there were 22; in the next 30; and the largest number of cases, 35, were between the ages of forty and fifty. This completely tallies with my own experience; and seems to favour the suspicion which I have formed, that the pressure exerted on the nerve in locomotion and in sitting is one principal cause of the great liability to Neuralgia which distinguishes the sciatic nerve; and this idea seems to be favoured by the further fact elicited by Valleix, that from thirty years onward the number of male is greatly higher than that of female sciatic patients.

There are three very distinct varieties of the disease, however, according to my experience. The first variety is obscure in its origin, but may be said, in general terms, to be connected with a strongly marked nervous temperament, which is indicated in the female by a tendency to hysteria, and in the male by an abnormal sensibility to nervous impressions. The subjects of this variety of sciatica are mostly below the age of forty, and have generally been liable to other forms of Neuralgia; the actual attack of sciatica is excited by some bodily fatigue or mental distress which, on other occasions, has produced sick-headache, or intercostal Neuralgia, &c. Very many of these patients are anæmic. The greater number of them are females, and in many (whether as cause or effect) there is decided amenorrhœa, and sometimes chlorosis. In this variety the pain, though chiefly affecting the sciatic nerve and its branches, is apt secondarily to invade some of the nerves which issue from the lumbar plexus. I cannot avoid the suspicion, though the proof is most difficult, that the affection not unfrequently depends on, or is much aggravated by, an excited condition of the sexual apparatus: certainly I have observed it with marked frequency in women who remain single long after the marriageable age, and in the case of several male patients there has been either the certainty or a strong suspicion of venereal excess. The actual outbreak of pain is generally sudden, but in many instances there has been a tendency to numbness, or abnormal sensations, in the skin of the back part of the thigh, or in some part of the course of the branches of the nerve for some time previously. Like all forms of sciatica, this affection is usually obstinate, and requires assiduous and sometimes prolonged treatment for its removal; but it is incomparably more manageable than other varieties.

The second variety of sciatica occurs for the most part in middle aged or old persons who have long been subject to excessive muscular exertion, or have been much exposed to cold, and especially *damp* cold, or who have been subjected to both of these kind of evil influences. One must include also, I think, in this group, a certain number of patients whose age need not be so advanced, but who have been liable, along with depressing influences of a constitutional kind, to prolonged pressure on the nerve from the habitual maintenance of the sitting posture, in their business, for many hours together.

The patients who suffer from this second variety of sciatica are mostly, as already said, of middle age or more; but this statement must be understood to be made in the comparative sense which refers rather to the vital condition of the individual than to the mere lapse of years. Many of them have hair which is prematurely gray: and in some the existence of rigid arteries, together with *arcus senilis*, completes the picture of organic degeneration. In particular cases where depressing influences have been at work for a long time, or unusually active, these appearances rectify the impression we should otherwise receive from learning the nominal age of an individual; this is especially the case with persons who have for a long time drunk to excess. I am at a loss to know how Valleix and many others can have overlooked the frequent occurrence of this type of constitution among the most numerous group of sciatic patients—those between thirty and fifty years of age: unless, indeed, we suppose that many of their "robust" patients were so fresh in colour and possessed such good muscular strength as to lead the physician to ignore the far more significant indications which are given by the above-mentioned appearances.

A prominent feature in this variety of sciatica is its great obstinacy and intractability. Another equally marked is the development, around one or more foci of severest pain, of spots which are permanently and intensely tender, and the slightest pressure on which is sufficient to renew the agony of acute pain: this development of tender points is far less marked in the preceding form of the disease. The places which are specially apt to present this phenomenon are as follows: (1) A series or line of points, representing the cutaneous emergence of the posterior branches, which reaches from the lower end of the sacrum up to the crista ilii. (2) A point opposite the emergence of the great and small sciatic nerves from the pelvis. (3) A point opposite the cutaneous emergence of the ascending branches from the small sciatic which run up towards the crista ilii. (4) Several points at the posterior aspect of the thigh, corresponding with the cutaneous emergence of the filets of the crural branch. (5) A *fibular* point, at the head of the fibula, corresponding to the division of the external popliteal. (6) An *external malleolar*, behind the outer ankle. (7) An *internal malleolar*.

Another circumstance which distinguishes the form of sciatica which we are considering, is the degree in which (above all other forms of Neuralgia) it involves paralysis. By far the largest part of the whole *motor*-nervous supply for the limbs passes through the trunk of the great sciatic; it might therefore be naturally expected that a strong affection of the sensory portion of the nerve would, in a reflex manner, produce some powerful effect on the motor element. This effect is most frequently in the direction of paralysis. Complete palsy is rare, but in a large number of cases which have lasted some time there can be no doubt that there is a positive and very considerable loss of motor power, independently of any effect which may be produced by wasting of muscles. It is of course necessary to avoid the fallacy which might be produced by neglecting to observe whether movement was merely restricted in consequence of its *painfulness.*

Anæsthesia is also a common complication of sciatica, far commoner, as I venture to think, than it has been represented either by Valleix or Notta. It is necessary, however, to be explicit on this point. In the early stages both of this form of sciatica and of the milder varieties previously described, there is almost always partial numbness of the skin previous to the first outbreak of neuralgic pain, and during the intervals between the attacks. By degrees this is exchanged, in the milder form, for a generally diffused hyperæsthesia around the foci of neuralgic pain, while other portions of the limb may still remain anæsthetic. In the severer forms it sometimes happens that, besides an intense hyperæsthesia of the skin over the painful foci, there is diffused hyperæsthesia over a greater part or the whole of the surface of the limb. But it is important to remark that both in the anæsthetic and the hyperæsthetic conditions (so called), the *tactile sensibility is very much diminished.* I have made a great many examinations of painful limbs in sciatica, and have never failed to find (with the compass points) that the power of distinctive perception was very decidedly lowered.

Convulsive movements of muscles are met with in a moderate proportion of the cases of severe sciatica of middle and advanced life, in which affection they are entirely involuntary. They differ from certain spasmodic movements not unfrequently observed in the milder form (and especially in hysteric women), for these are more connected with defective volition, and are, in truth, not perfectly involuntary. In several cases of inveterate sciatica I have seen violent spasmodic flexures of the leg upon the thigh. Cramps of particular muscles are occasionally met with. I have seen the flexors of all the toes of the affected limb violently cramped; and in one case the patient was troubled with severe cramps of the gastrocnemius. It is chiefly at night, and especially when the patient is just falling asleep, that this kind of affection is apt to occur.

A third variety of sciatica is the rather uncommon one (so far as my experience goes) in which inflammation of the tissues around the nerve is the primary affection, and the Neuralgia is a mere secondary effect, from mechanical pressure on the nerve which, however, is apparently not itself inflamed. I believe that these cases are sometimes caused by syphilis, and sometimes by rheumatism. It need hardly be said that this affection is essentially different, and requires a different treatment from Neuralgias in which the disturbances originate in the nervous system.

(II.) *Visceral Neuralgias.*—This most important class of diseases still remains very much unknown; but it is constantly assuming a greater consequence. The Neuralgias of viscera, of which anything can with confidence be said, are the following: (1) Cardiac, (2) Hepatic, (3) Gastric, (4) Peri-uterine (including ovarian), (5) Testicular, (6) Renal.

It is, however, unnecessary to describe the clinical history of these disorders here, since they will be treated of under the headings of the morbid affections of the particular organs which they infest.

Complications.—This part of our subject is of the greatest interest, and the facts regarding it are, to a considerable extent, of recent discovery. If we turn to the excellent treatises of Valleix and Romberg, which appeared about a quarter of a century ago, we find a very inadequate importance assigned to the secondary affections which occur in Neuralgia. The convulsive movements of the facial muscles which occur in the severer forms of *tic douloureux* could not fail, of course, to attract attention even from the earlier times. Of the functions of special sense Valleix only mentioned *hearing* as liable to be affected. Injection of the conjunctiva he spoke of as if it were a rare phenomenon in trigeminal Neuralgia. He did not mention modifications of nutrition at all, except those of the hair; and of modifications of secretion he only enumerated lachrymation, mucous flux from the nostril, and salivation as occasional phenomena. Of disturbances of the stomach he took a more appreciative view; and he mentioned, as a remarkable fact, that he never knew facial neuralgia caused by gastric disturbance, but had frequently observed the latter affection to occur in the course of a neuralgic attack, and apparently as the consequence of it. He gives no pathological explanation of the connection between them.

It is to M. Notta[1] that we owe the first scientific treatment of this subject of the complications of Neuralgia. The importance of these secondary affections is particularly brought out by this author in his remarks on trigeminal Neuralgia, of which he analyzes 128 cases. As regards special senses, he states that the retina was completely, or almost completely, paralyzed in ten cases, and in nine others vision was interfered with; partly, probably, from impaired function of the retina, but partly, also, from dilatation of the pupil, or other functional derangement independent of the optic nerve. The sense of hearing was impaired in four cases. The sense of taste was perverted in one case, and abolished in another. As regards secretion: Lachrymation was observed in sixty-one cases, or nearly half the total number. Nasal secretion was repressed in one case; in ten others it was increased on the affected side. Unilateral sweating is spoken of more doubtfully, but is said to be probably present in a considerable number of cases. In eight instances there was decided unilateral *redness* of the face, and five times this was attended with noticeable *tumefaction*. In one case the uniliteral redness and tumefaction persisted, and were, in fact, accompanied by a general hypertrophy of the tissues. *Dilatation of the conjunctival vessels* was observed in thirty-four cases. Nutrition was affected as follows: In four cases there was unilateral hypertrophy of the tissues; in two, the hair was hypertrophied at the ends, and in several other cases it was observed to fall off or to turn gray. The tongue was greatly tumefied in one case. Muscular contractions, on the affected side, were noted in fifty-two cases; of these, in thirteen, the contractions were in the muscles of the lip and nostril; in ten, there was tremor of the eyelid; in a great number many muscles were simultaneously affected. *Permanent tonic spasm* (not due to photophobia) was observed in the eyelid in four cases; in the muscles of mastication, four times; in the muscles of the external ear, once. *Paralysis* affected the motor oculi, causing prolapse of the upper eyelid, in six cases; in half of these there was also outward squint. In two instances the facial muscles were paralyzed in a purely reflex manner. The pupil was dilated in three cases, and contracted in two others, without any impairment of light; in three others it was dilated, with considerable diminution of visual power. Finally, with regard to common sensibility—M. Notta reports three cases in which *anæsthesia* was observed. *Hyperæsthesia* of the surface only occurred in the later stages of the disease.

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[1] Archives Générales de Médecine, 1854.

Various other observers have added to this list of the secondary affections which may occur in facial Neuralgia the following: Iritis, glaucoma, corneal clouding, and even ulceration; periostitis, unilateral furring of the tongue, herpes unilateralis, &c.

All the above complications of fascial Neuralgia, excepting glaucoma, have been under my own observation, and most of them I have seen in a great many cases. Moreover, my own attention had been called independently to the subject by my own unlucky personal experience. I began, at the age of about fourteen, to suffer from attacks of unilateral facial Neuralgia in the right side (chiefly supra-orbital), which very soon assumed the type of severe migraine, such as it has already been described. A year or two later, the pains being at this time severe and frequent, there occurred a painful thickening and tumefaction of the periosteum round the brow, and also the formation of one or two dense white patches on the cornea, in the centre of which small phlyctenular ulcers appeared. About the same time, probably, there occurred a great thickening of the fibrous tissue, surrounding the upper end of the nasal duct, which caused a dense stricture of that canal. Some years later, when the attacks had become much less frequent, they recurred with great severity during the prostration brought on by choleraic diarrhœa. I then first noticed that the hair of the eyebrow was whitened opposite the supra-orbital notch, and that gray hairs were thickly strewn over the right side of the head for some time after the attack; and this phenomenon has occurred after every severe attack since that time. It only lasts in intensity for a few days, and the colour soon becomes partially restored to its original tint, but *without any falling off of the hair.* The latter fact seems at first difficult of belief; but I have most closely observed the phenomenon, and have since witnessed the same thing in several patients, both of my own and other practitioners. Another nutritive modification which I have seen in my own case is the formation of a dense epithelial fur on one half of the tongue.

There is another complication which, so far as I am aware, was first identified by myself as having a definite relation to facial Neuralgia: viz. erysipelatoid inflammation of the tissues to which the painful nerve is distributed. Some years ago I was much surprised at observing, in a women aged thirty-two, a patient of the Chelsea Dispensary, a most acute attack of unilateral erysipelas of the face and head, supervening on some severe and frequently recurring attacks of Neuralgia, which affected all three divisions of the trigeminus, but was most violent in the branches of the ophthalmic division. On the occurrence of the erysipelas, the acute pain subsided, but the most intense tenderness remained for some days, and pressure anywhere in the track of the nerves would re-excite a momentary spasm of pain. Since that time I have been constantly on the look-out for similar cases, and have observed a good many either in my own practice or that of others. In several instances I have seen Neuralgia of the fifth actually terminate in an affection undistinguishable from ordinary erysipelas, limited to the painful parts: in four of these cases it was limited to the side of the nose, the infra-orbital and frontal regions. But the facts bearing on a connection between facial neuralgia and erysipelas, are by no means limited to this. In twenty-two cases which have come under my care, of patients suffering either from typical facial tic, from migraine, or from *clavus hystericus*, I have discovered, by inquiry, the existence of a strong tendency to erysipelatoid inflammation of the parts then affected with Neuralgia. An attack of erysipelas would be brought about in these patients, by the most trivial causes, by a slight exposure to cold winds, or, on the other hand, by unusually depressing fatigue, or emotion. The majority of these patients gave me a family history which showed a marked inherited disposition to neurotic affections, a circumstance which, as we shall hereafter see, is of importance.

Perhaps the most striking of all the cases which have come under my notice is one which was obligingly sent to me by Mr. Ernest Hart, and which I have already published[1] in detail. The exciting cause of the whole train of phenomena was apparently fright, from an accident which there was no reason to suppose inflicted any direct physical injury. The sequence of events was: (1) abrupt cessation of menses, with hysteric depression; (2) severe neuralgia of the first and second divisions of the fifth, quickly producing iritis, with effusion of lymph; (3) erysipelas, exactly limited to the skin of the painful parts, and as it were supplanting the Neuralgia.

The concurrence of *iritis* with the erysipelas, in this case, is a most interesting fact, as showing a general tendency to paralysis of the vessels in the affected district, which will be much dwelt on in the section on pathology. The connection of iritis with Neuralgia is a subject which, although only quite recently mooted, already assumes an extraordinary magnitude, and may yet lead to pathological and therapeutical discoveries of first-rate importance. For my own part I do not hesitate to express the belief that the very vague and ill-defined disease known, in common phrase, as "Rheumatic iritis," is destined to be almost, if not quite, banished to limbo; for that careful observation will prove the cases so denominated to be nearly all capable of classification as "Neuralgic iritis."

The symptoms which characterize this malady are as follows: The patient first of all complains (usually after exposure to cold wind, or damp, or both) of pain round the orbit, which gradually increases to a pitch of great severity, but which exhibits marked intermissions or at least remissions. The vessels of the conjunctiva, but more particularly of the sclerotic, then become injected. Last of all the iris itself becomes cloudy, and, in severe cases, actual deposits of lymph take place. I cannot hesitate to say, from careful inquiries into the past history of such patients, that this kind of affection occurs quite as frequently in persons who have never shown any distinctive rheumatic tendencies as in those who have. On the other hand there is nearly always a recognizable history of tendencies towards neuralgic affections of one sort or another. And indeed, with regard to the whole series of so-called chronic rheumatic affections of fibrous membranes, it must be remembered that there is reason to doubt whether, on careful analysis, their local symptoms can be grouped into any intelligible unity. It seems far more likely that, as the consequences of spinal irritation become more perfectly known, the whole group of such affections will be resolved into particular cases of centric nervous irritation.

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[1] Lancet, 1866, vol. ii. p. 548.

And finally, it may be noted that this variety of iritis is greatly more amenable to the influence of quinine than to that of any other remedy; in fact, beyond the use of belladonna to prevent pupillary adhesion, no other treatment is required.

Herpes, as a complication of dorso-intercostal Neuralgia, has been already referred to. Although not so commonly, it may probably attend Neuralgia of any superficial nerve. For instance, the occurrence of a regular facial herpes zoster has been considered by many authors not so much a rarity as an impossibility. But various single cases have been recorded by individual observers of late years, and in a very valuable paper on unilateral herpes in the London Hospital Reports for 1866, Mr. Jonathan Hutchinson reckons up fourteen cases, including several which came under his own observation; some of them are mentioned to have been accompanied by Neuralgia of the fifth. In one of these cases, in which the Neuralgia was particularly severe, the herpetic vesicles were followed by ulcers, which left considerable scars on the forehead. I have myself seen herpes the attendant of two cases of cervico-brachial Neuralgia, in one of which the ulcerations following the vesicles were a cause of severe suffering; and in one instance of sciatica in my practice there occurred enormous vesicles, or rather bullæ, on the back of the calf, which formed most troublesome and exquisitely painful ulcers. Barensprung[1] records a similar case, in which the irritation of the sciatic was secondary to psoas abscess.

The tendency of deeper tissues to be affected in an inflammatory manner as a consequence of Neuralgia, which is especially shown in the cases of neuralgic iritis, receives every-day illustration. In fact, the painful points so universally observed in severe or inveterate cases are probably produced by a subacute inflammation, first of the fibrous membranes (periosteum or fascia) in contact with the nerve at points where it comes out from a deeper to a more superficial position, and further (in some cases) to all the subcutaneous tissues for an inch or two round. In one of the cases of cervico-brachial Neuralgia already referred to, a bright red painful spot, as large as half-a-crown, appeared on the outer side of the arm; there was dense thickening of tissues in this situation, and the resemblance to an inflamed syphilitic node was remarkable. The neuralgic origin was, however, unmistakable. Among the cases of facial herpes collected by Hutchinson, there are several in which serious, or even irremediable damage was inflicted on the eye by general inflammation of its tissues.

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[1] Loc. cit.

DIAGNOSIS.—The diagnosis of neuralgic affections from others which may involve pain is, on the whole, not difficult, if we are able to extract from the patient a full account of his history. The essential points for observation are: 1. The situation and direction of the pain, whether this is unilateral, whether it corresponds to the course of a recognizable nerve branch or branches. 2. Whether it is intermittent, or markedly remittent. The points of history which are most important are: 1. Whether the patient has suffered Neuralgia before, and if not, whether neuralgias, or neurotic disease of any kind have prevailed in his family. 2. Whether the attack was preceded by nervous depression, or was ushered in by distinct numbness or tingling. 3. Whether the immediate excitant appeared to be cold or damp, or both, or a severe nervous shock, or a direct physical injury. 4. (If the affection has lasted some time) whether there has occurred any development of secondary tender points in the situations where, as above described, they might be expected. 5. Whether the patient has suffered from secondary affections of glands (*e. g.*, lachrymation, in the case of facial pain) during the attacks, or of temporary congestion of surfaces (*e. g.*, of the conjunctiva) in the same case, or from alterations of epithelium or hair, or herpetic eruptions, or erysipelatoid inflammation of the skin corresponding to the distribution of the affected nerves.

The affirmative answer to any of these questions is, *pro tanto*, in favor of the genuinely neuralgic character of the disorder; and, indeed, the union of features 1 and 2, under the heading of "observation," with one, or still more with two or three, of the "historical" facts, would be pretty well decisive in this sense.

The main source of embarrassment, in difficult cases of diagnosis, is the impossibility which we sometimes encounter of getting a clear history. This is especially apt to occur when we are called to the patient not so much on account of the primary neuralgic affection as because of severe secondary consequences that happen to have arisen. For instance, in a case of severe Neuralgia of the fifth, attended with periosteal inflammation round the orbit, or with intense conjunctivitis, and, it may be, corneitis, or even iritis, the history related is likely enough to lack explicit details of the primary affection. It is necessary to inquire very strictly whether the pain, when it first occurred, was, or was not, accompanied by tenderness on pressure; and whether this simple pain markedly preceded the organic lesions.

Another serious difficulty arises, not unfrequently, in distinguishing between true Neuralgia, and that form of pain which is vaguely called hysteric; and also between the former, and Myalgia not associated with the hysteric diathesis. The great characteristic of true Neuralgia is the limitation of the pain to the course of recognizable branches of nerves, as opposed to the diffused character both of hysteric and neuralgic pains. A history of intense hysteric predisposition may help the diagnosis in some cases, and a history of overwork done by under-nourished muscles may clear it up in others. But hysterical persons may, and sometimes do, suffer from true Neuralgia. And again, it is very common for hysteric patients to develop tender points in certain situations (especially beneath the left mamma, in the epigastrium, and at various situations along the vertebral fossæ which lodge the great muscles of the back), which bear a superficial similarity to the tender points developed in long-standing Neuralgia. The more generalized hyperæsthesia of the skin which usually accompanies these symptoms, when they are due to hysteria, will seldom be observed, however, in true Neuralgia; and the remarkable affections of volition which mostly accompany the hysteric diathesis rarely occur in Neuralgia pure and simple. A means of diagnosis between hysteric hyperæsthesia and the true Neuralgia which I have found most useful is the use of Faradisation. It has a strikingly inactive effect in the former, but acts much more slowly, or not at all, in true Neuralgia.

It is almost impossible to lay down rules of diagnosis, in this place, between neuralgia pure and simple, and that which accidentally occurs from a nerve becoming squeezed, or otherwise damaged, in the progress of tumours or other organic diseases external to it. The reader must be referred to the diagnostic characters mentioned in the treatises on such diseases for the means of distinction.

The neuralgic pains which usher in locomotor ataxy, are highly peculiar, and their diagnosis from ordinary Neuralgia must be learned by studying the article on the former disease.

PROGNOSIS.—The prognosis of Neuralgia is nearly always an uncertain matter. The simplest case is when a clearly malarial history can be made out, and when the blood infection has not lasted too long: here we may expect a speedy cure by appropriate treatment. The least complicated varieties of traumatic Neuralgia—those in which the irritation is only kept up by some mechanical irritation (*e.g.*, a foreign body lodged, or a tight cicatrix making pressure)—of course offer a good chance of cure by surgical interference. Among the Neuralgias which are more purely of internal origin, those are chiefly to be regarded as benign which occur in young subjects; and next to youth in favourable influence on the prognosis comes the fact of otherwise unbroken health. Neuralgia becomes progressively less curable in each successive decade of life, and more especially after the commencement (at whatever nominal age) of the symptoms of organic degeneration. Very formidable, in all cases, is the fact that the patient's family have been liable either to severe Neuralgias, or to other grave neuroses. And when a patient with such a family history is first attacked with a Neuralgia after he has already entered on the period of organic degeneration, his chances of complete recovery must be reckoned very small. Moreover, such a Neuralgia is not unfrequently the first warning of a degeneration of the centres, which will end with softening of the brain.

These are the fundamental points in prognosis. A less essential, but still important, class of momenta are the circumstances of the patient's life; how far, for instance, he is likely to be exposed to the hostile influences of cold, damp, and privation, with the disorders which they tend to engender; and how far there may be unavoidable exposure to the influences of mental distress, or of the weariness of an objectless life.

PATHOLOGY AND ETIOLOGY.—These two subjects, in the case of Neuralgia, are inextricably mixed; nor is it possible to discuss the one without constant reference to the other. They are so mixed, firstly, because there is no sufficient basis of anatomical fact to support a "pathology," in the ordinary sense; and secondly, because, in addition to the philosophical difficulties which always beset the construction of an etiological system, there are, in the case of Neuralgia, special obstacles to the decision as to what is "cause" and what "effect" arising from the necessity of regarding a neuralgic person as a mere offshoot of a certain family beset with peculiar tendencies, rather than as an individual who forms his own physical destiny by the manner and circumstances of his life.

Of facts tending to elucidate the morbid anatomy of Neuralgia there are very few. This necessarily follows from the rarity with which neuralgic patients die under circumstances which lead to any careful examination of the nerves and nerve centres. Among the very few recorded cases which show anything positive is the remarkable one related by Romberg.[1] The patient was a victim to the severest form of facial Neuralgia, "of the period of bodily degeneration" such as I have described it. The Gasserian ganglion of the painful nerve was almost destroyed by the pressure of an internal carotoid aneurism, the trunk and posterior root of the nerve were completely degenerated, and the atrophic process had extended, in less degree, to the nerve of the opposite side.

This case, alone, of course, *proves* nothing as to the general question of the pathology of Neuralgia. But it teaches a notable fact, that the extremity of pain can be suffered in a nerve in which sensation would soon have become extinct by dissolution of the connection between centre and periphery. It is imaginable that a not less real, but less advanced and less coarsely obvious atrophic change may have been present in every case of Neuralgia, even where dissection has failed to reveal anything amiss. It must be remembered that the microscopic study of morbid changes in nerve tissues is even now only in its infancy. It would be vain to occupy a large space, in a practical treatise, with disquisitions on a subject at present so obscure as the pathology of Neuralgia; I shall therefore content myself with stating the hypothesis which appears most probable to me, and the mere outline of the reasons which incline me to adopt it.

I think it most probable that in *all* cases of Neuralgia there is either atrophy, or a tendency to it, in the posterior or sensory root of the painful nerve, or in the central gray matter with which it comes in closest connection. The following are the heads of the argument:—

1. Neuralgia is eminently hereditary. It is constantly observed to prevail in particular families, breaking out in successive generations

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[1] Diseases of Nervous System, Syd. Soc. Trans., vol. i.

and various individuals. But what is even more important to notice is the fact that these neuralgic families are almost invariably also distinguished by a tendency to the severer neuroses—insanity, cerebral softening, paralysis, epilepsy, hypochondriasis, or an uncontrollable tendency to alcoholic excess; and very often in the various members of the same family we may observe the alternation of all these affections, and of Neuralgia, in various members.

2. Such hereditary tendencies in a race seem strongly to suggest a tendency to imperfection in the congenital construction of the central nervous system; so that we may imagine that certain cells and fibres of this system are, in a large proportion of that race, built, as it were, only to live with perfect life for a short term. The weak spot may be in one place in this person, in another place in that.

3. Given such a weak spot congenitally present, all hostile influences will tell more heavily on it than on the rest of the organs. The depressing influence of cold applied to the periphery, of a wound of the trunk or branches of a nerve, of a severe shock (mental or physical) to the nervous centres generally, or of continued alcoholic excesses, will suffice to throw the imperfectly constructed cells into a state of positive disease, which may end in decided atrophy. Even in the absence of any special external cause, the depressing influence on the nervous centres produced by the great crises of puberty, child-bearing, the involution of the female organs at the grand climacteric, and still more the partial failure of nutrition which the arterial degeneration of advanced life would cause—any of these may suffice to start the local morbid process.

4. A very weighty argument in favour of the idea that central mischief is a factor in all cases of Neuralgia is the great frequency of complications, such as have been described, in which various nerve-fibres, quite distinct from those which are the seat of pain, and connected with these only through the centre, are secondarily affected.

5. Those cases in which a localized peripheral lesion is the immediate excitant also require for their explanation the assumption of a peculiarity in the individual, as one factor, and that the most important, in the production of the Neuralgia. For of hundreds of persons to whom exactly similar lesions happen every year, not more than two or three, perhaps, experience any Neuralgia; and these two or three will, I believe, be invariably found to belong to neurotic families.

6. The only cases to which the theory of congenital central imperfection appears neither applicable nor necessary are those in which a pressure, ulceration, or other lesion extending from neighbouring tissues towards the nerve, maintains a constant depressing centripetal influence which it is not difficult to suppose might impair the vitality of the posterior root, or of the central gray matter.

7. Certain influences, especially that of excessive drinking, which notoriously tend to produce degeneration of the nervous centres, are powerful predisposers to the production of Neuralgia of the inveterate type. Moreover, the descendants of drunkards, among other evidences of an enfeebled nervous organization, are decidedly prone to Neuralgia.

So frequently have I made the discovery that neuralgic patients have had drunken parents, that I cannot suppose the coincidence to be accidental.

TREATMENT.—The treatment of Neuralgia may be classified under three heads. The first division includes all remedial measures which are intended to improve the general nutrition, including that of the nervous system, or to remove any vicious condition of the blood which may impair nervous function. The second division includes the narcotic stimulant remedies. The third division comprises all the remedies which are destined to exert a direct influence upon the affected nerve.

1. Constitutional treatment.

(*a*.) Under the head of *nutritive* remedies for Neuralgia, by far the most important sub-class is the series of animal fats. There is a theoretical basis for the use of these substances which it is impossible to ignore, although I have no desire, in the present state of our knowledge, to insist too absolutely upon it. In some way or other, fat must undoubtedly be applied to the nutrition of the nervous system, if this is to be maintained in its organic integrity ; since fat is one of the most important, if not the most important, of its organic ingredients. But if our theoretical ideas on this point be as yet deficient in the exactness which is to be desired, there can be no doubt, I think, that the practical lessons which they would teach are abundantly verified in experience. If we take, for instance, the class of Neuralgias which are most plainly and indubitably connected with impaired nutrition—those of advanced life, and particularly the inveterate forms of facial tic douloureux—there is the strongest ground, in the result of experience, for insisting upon the value of this class of remedies. To Dr. Radcliffe belongs the merit of having been chiefly instrumental in bringing forward this therapeutical fact in this country, and it is one which I have had repeated occasions to verify. It is a very singular circumstance, which also was first pointed out by Dr. Radcliffe, that neuralgic patients are, in the majority of instances, found to have cherished a dislike to fatty food of all kinds, and to have systematically neglected its use. I have also obtained strong evidence that this is the general rule, and the reverse a rare exception. And it has several times occurred to me to see patients entirely lose neuralgic pains, which had troubled them for a considerable time, after the adoption of a simple alteration in their diet, by which the proportion of fatty ingredients in it was considerably increased.

Cod-liver oil occupies the highest rank among fatty remedies ; where it does not immediately disagree with the stomach, this oil is the best fat to employ. But in other cases butter, and especially cream, may be employed with great advantage; and in fact one of the most successful examples of the treatment of Neuralgia which I record was treated solely by the administration of Devonshire cream in increasing, and finally in very large quantities. Even the vegetable olive oil, though far inferior to animal fats as a general rule, may occasionally be used with good effect. It is necessary in many cases to make a series of trials, before we arrive at the particular form of fatty food which is best suited to the particular patient.

(*b*) The various preparations of iron are of use, so far as I know, only in cases which are marked by the existence of actual anæmia. For patients who possess well globulated blood (as indicated not merely by the colour of the face, but by that of the mouth and tongue, especially by the freedom of the latter from teeth-markings, and by the absence of the drowsiness, *muscæ volitantes*, &c., which indicate defective blood-nutrition of the brain) I do not believe that iron treatment has any value. The carbonate, in large doses, is the best form, when iron is needed at all.

(*c*) The employment of the so-called special nerve-tonics is of great use in some cases, of none at all in others. Quinine, arsenic, and zinc (in various preparations) are the only medicinal substances of this class which possess any solid claims to efficacy.

With regard to the efficacy of quinine there are the most conflicting opinions, except in one respect. No one doubts that in the Neuralgias which are of malarious origin this medicine, though not infallible, is extremely efficacious. It should be administered, in all cases which from their regular intermittence leave room for a suspicion that this may be their nature, in full doses (five to twenty grains) shortly before the time at which the attack of pain is expected; in fact just in the way which proves most effective in the treatment of regular ague. If after three or four doses a decided improvement is not effected, the probability is great that the Neuralgia is not malarial. Nevertheless, arsenic may subsequently be tried if other means (to be presently described) prove ineffectual.

In a certain number of non-malarial cases, also, quinine produces good effects; but there is no need, nor is it advisable, to employ it in such large doses. From two to three grains, three times a day, is the largest quantity which is likely to be of any use, if my own experience is worth anything. I know of no circumstances which indicate beforehand that quinine will be useful in non-malarial cases, *except that it seems always much more effective in Neuralgia of the ophthalmic branches of the fifth, than in other non-malarial Neuralgias.*

With regard to other non-malarial Neuralgias I share Valleix's opinion, that it is far from being frequently useful.

Arsenic is a more widely applicable remedy; for it is useful in many cases both of the malarial and of the non-malarial type. In the former, it should be given, probably, in full doses, ten minims, increasing to thirty, of Fowler's solution, three times a day. In the non-malarial forms, the ordinary tonic dose of five minims of Liq. Arsenicalis, three times a day, or $\frac{1}{16}$ grain of Arseniate of soda in pill, with extract of hop,[1] will effect all the good which this medicine can produce. The ordinary precautions must of course be observed, as in any other case where we employ arsenic. There is one form of Neuralgia, however, which merits special mention in relation to arsenical treatment; I mean the specially neurotic form of angina pectoris. In France this remedy is extensively used for cardiac Neuralgia. I have myself seen most remarkable relief afforded by arsenic in this complaint, and an extraordinary tolerance of the system to large doses of it. Very recently Dr. Philipp has put on record a most interesting case of the kind.[1] There are, indeed, some patients whose alimentary canal is too irritable to bear this remedy at all; but it is usually well borne, and often extremely efficacious. Arsenic may also be effectively administered by subcutaneous injection.

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[1] Dr. Radcliffe tells me he finds that extract of hop enables arsenic to be better tolerated than when given alone.

The preparations of *zinc*, and more especially the valerianate, enjoy a high reputation with some practitioners. It is necessary to record this fact; but I cannot say that I have ever seen any good result, which could be confidently attributed to these remedies, in Neuralgia.

(*d*) Last, among the constitutional remedies, we have to mention those which are directed against a real or presumed depravation of the blood by some special poison. Neuralgia may certainly arise from *syphilis;* but then it is probably always due to a local deposit somewhere in the course of the affected nerve. Where this can be suspected iodide of potassium should be administered in large doses; and if this fails, the bichloride, or biniodide of mercury, in small doses. Neuralgia is said to have frequently a *gouty* origin: but the facts on which this statement rests, perhaps hardly warrant a decided opinion. They scarcely amount to more than this, that in a certain ill-defined group of cases, the subjects of which are perhaps more often than not of a gouty constitution, a form of Neuralgia occurs which yields more speedily to treatment with colchicum than to any other remedy. Twenty to thirty minims of the tincture or the wine, three times a day, will be sufficient; and if a marked good effect be not produced in two or three days, the medicine should be abandoned, or even earlier, if any tendency to weakness or irregularity of the heart's action be perceived.

"Rheumatic" Neuralgia is a phrase which, under the precautions above indicated, must still be retained, as signifying a class of cases in which inflammation of circumjacent fibrous tissues seems to cause the neuralgic pain by producing mechanical damage to the nerve. Iodide of potassium in five to ten grain doses twice or thrice daily is often useful; causing the absorption of local deposits, or rather of local proliferations of fibrous tissue. Even in cases where the Neuralgia was the primary affection, and the fibrous hypertrophy secondary to it, the local tenderness and swelling appear to be often diminished by the use of this remedy. I have never seen *colchicum* produce the slightest benefit in these cases, in which local tenderness is a prominent symptom.

2. We have now to consider the large group of narcotic stimulant remedies for Neuralgia. In this class, I include not only the substances generally recognized as belonging to it, such as opium, belladonna, alcohol, &c. &c., but also many others, such as ammonia, tur-

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[1] Berlin. Klin. Wochensch. 4, 1865.

pentine, &c., which are commonly spoken of merely as "stimulants:" and also substances which, like aconite, are ordinarily ranked either as pure "sedatives" or as "acro-narcotics." I shall not retrace here the arguments which I have given at large, in my work on "Stimulants and Narcotics,"[1] to prove that all these substances possess the common property of assisting nerve function when given in small doses, and of paralyzing it when given in excess.

The narcotic-stimulant group of remedies, when administered internally or by subcutaneous injection, may be said to hold an intermediate position between the constitutional and the local agencies which we may employ against Neuralgia. On the one hand, they enter the general circulation, and pervade the organism. On the other hand, it may be suspected that in many cases their effect is produced mainly by a local action, either upon the central nuclei of affected nerves, or perhaps upon their spinal ganglia.

Indisputably, at the head of all this class of remedies stands opium. And we may consider opium, as used against Neuralgia, to be fully represented, for every useful purpose, by morphia. But the gastric administration of opiates can, after all, be only considered as *palliative*. The invention of the subcutaneous injection (which was imperfectly forestalled by the *endermic* method), has thrown quite a new light on the capabilities of opium as an anti-neuralgic. It may be confidently said that in the right use of this remedy, we possess the means of permanently and rapidly *curing* very many cases, and of alleviating, to a degree quite unknown before, the suffering caused by even the most inveterate forms of Neuralgia.

The *local* injection of alkaloids, as first systematically employed by Dr. Alexander Wood, is a proceeding which is specially applicable, in my opinion, only to a few cases. In many instances the nature of the integument at or near the point of severest pain, is such as to render the local operation inconvenient or even impossible. In the great majority of cases, especially those which are seen early, the injection may be more advantageously performed in some indifferent place, such as the loose skin over the front of the biceps muscle, or, in fact, in any place where a fold of skin can be conveniently picked up. The substance injected, if properly dissolved in a convenient quantity of fluid, quickly enters the general circulation, and, in a large majority of instances, produces just as decided an effect on the local nerve pain, as if it had been locally injected. I cannot doubt that, in the greater number of cases, the "local" injection is such only in name; the injected substance producing no effect till it has entered the absorbent vessels of the veins, and thence travelled all round the circulation to the small arteries, either of the spinal and ganglionic centres, or, perhaps, to the arteries which supply the peripheral branches of nerves. The discovery of the great utility of the plan of general, as opposed to local injection, is due to Mr. Charles Hunter, and is of the highest importance, not merely as a practical fact, but in the suggestions which it gives as to the general subject of the place of origin of Neuralgia. There is, however, a class of cases in which the local injection of morphia becomes desirable. In advanced cases, in which very great local hyperæsthesia exists, and there is reason to think that thickening and hypertrophy of the structures round the nerve have taken place, I have several times known injection at a distant point to fail, when local injection of the same substance, in the same dose, has immediately produced a marked effect; and the same thing has recently been pointed out to me by several medical men. It happens sometimes, however, that in the very cases which seem most to demand the local injection, the local tenderness makes the operation intolerably painful: in such a case I should recommend a plan which Mr. Hart introduced to my notice, viz: that of first rendering the skin insensible with ether spray, and then injecting. As the freezing process renders the tissues quite hard, a *steel* canula to the syringe is needed to penetrate them.

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[1] London: Macmillan. 1864.

As regards the dose to be employed, I cannot but think that the received ideas are much in fault. One hears constantly of as much as half a grain or one grain, even, of morphia being employed, even at the outset. That such quantities are necessary, sometimes, where the cellular tissue injected into is already irritated and thickened, I have no doubt; and I explain it by the hypothesis that a good deal of the injected substance never enters the general circulation, nor even the vessels of the part, but lies encysted, just as is undoubtedly the case when one injects an irritant substance like pure chloroform into the cellular tissue anywhere. But I am quite certain that when injection of any non-irritant solution of morphia into a healthy cellular tissue is *neatly performed*, it is unnecessary and *even unsafe* to commence with larger quantities than $\frac{1}{6}$ gr. Both in my own practice and in that of a friend, I have known so little as $\frac{1}{4}$ gr. produce dangerous symptoms of poisoning in a person not especially sensitive to opium; and I am convinced that the activity of remedies hypodermically used is generally much underrated. I have produced all the desired effects by injection of not more than $\frac{1}{10}$ gr. in slight cases, and very rarely indeed (where the morphia is injected at an indifferent spot) do I increase the dose beyond $\frac{1}{2}$ gr. The best medium dose is $\frac{1}{6}$ gr. and the injections should be repeated, if possible, daily, or even twice a day in severe cases. In visceral Neuralgia, it need hardly be said, we are obliged to be contented with injection at an indifferent spot; yet (as, *e.g.*, in ovarian neuralgia) we sometimes produce excellent effects.

Next to opium in value, amongst the stimulant narcotics, is *belladonna* and its alkaloid *atropia*. The value of belladonna, as given by the stomach, is confined pretty much, according to my experience, to painful affections of the pelvic organs, on the sensory (as notoriously in the motor) nerves, of which it seems to have a special influence. In doses of $\frac{1}{6}$ gr. to $\frac{1}{2}$ gr. of the extract, it will frequently relieve ovarian dysmenorrhœa, as also some forms of superficial lumbo-abdominal Neuralgia. But by far the most important use of belladonna is by the subcutaneous injection of atropia. From the $\frac{1}{120}$ up to the $\frac{1}{30}$ of a grain is about the range of doses for adults; and I can confirm the statements of Mr. Hunter that by repeated applications of this treatment, even very severe and inveterate Neuralgias are often greatly relieved, and sometimes cured. It is a question whether there is not less tendency to relapse after this treatment than after that by morphia. On the other hand, I have met with more than one person in whom it has been found impossible to give a dose sufficient to relieve the pain without producing distressing head symptoms.

Next in value to morphia and atropia comes Indian hemp, which has been especially brought forward by Dr. Reynolds. A *good* extract of this, in doses of from ¼ to ½ grain or (rarely) 1 grain, given in pill, is very effective in some forms of Neuralgia, particularly in clavus hystericus and migraine. Even in the severest and most intractable forms it often palliates greatly. It should be given every night, whether there be then pain or not.

Muriate of ammonia is an excellent stimulant remedy in migraine and clavus, and in some cases of intercostal neuralgia. It should be given in 10 to 20 gr. doses. In cases of suspected hepatic neuralgia I have also found it very useful; and I believe that its action on the liver (in disorders of secretion) is through the nervous system entirely.

Sulphuric ether, which in the severer forms of superficial neuralgias is of little or no effect, is supremely useful in certain visceral neuralgias. It sometimes relieves gastralgia, and Neuralgia of uterine or ovarian origin, with magical rapidity. But it is still more valuable in the most purely nervous form of angina pectoris. I have now under my care a case of this latter affection, which I am convinced would have ended fatally long since, in one of the agonizing attacks of spasmodic heart-pain, but for the discovery that by taking a spoonful of ether immediately on its commencement, the patient can greatly mitigate the attack. This patient had tried arsenic, but from the irritability of his intestinal canal, could not take it. The same dose of ether has continued to produce the same happy effect on each occasion of its use for the last three years.

Aconite, in the form of Fleming's tincture, is of very great use in some forms of Neuralgia, especially in that kind of ocular neuralgia, with secondary inflammation, which is so frequently called rheumatic iritis. But, unfortunately, it is a very uncertain remedy in one respect; with some persons it produces nausea, burning in the throat, and a sense of cardiac depression, with doses which are quite harmless to other patients. In a case where I recently employed it, in only three minim doses every six hours, I was compelled to abandon it after the third dose, from the intensely depressing effect which it produced.

The oil of turpentine is a remedy which enjoys, or enjoyed, considerable reputation for its effect in a certain class of cases. In the more obstinate forms of sciatica it is at least worth a trial, although it is commonly very disagreeable to the patient; ten minims, three times daily, is the proper dose.

Still, after the enumeration of all the narcotic stimulant substances which have been, and many more that might be named, it would be idle to pretend that any of them are to be compared, for wide and general efficacy, to the subcutaneous use of morphia and atropine, and the internal use of Indian hemp in small doses.

I have reserved to the last, under the head of Stimulant Narcotics, what must be said about alcoholic drinks. There can be no question about the power of alcohol to relieve neuralgic pains; it is as distinct as that of opium. But the dangers of prescribing it as a remedy are very great, since the patients cannot always be induced to use it in the strictly medical manner in which alone it is safe. Too often, instead of employing it in the moderate stimulant doses which really are of service, they accustom themselves to drowning the pain with a large narcotic dose, and they thus contract a liking for the oblivion of drunkenness. It is of much consequence, where this is possible, that they should be forbidden to take alcohol otherwise than at meal times. If once they are induced to take it for the mere relief of acute pain, there is great danger that they will drink to excess. I am, nevertheless, convinced that a fixed daily allowance of wine or brandy (beer more rarely agrees), which shall contain not more than one ounce of absolute alcohol, is a decided help to recovery from every form of Neuralgia; and in the case of persons of firm character, who can be trusted to exercise self-control, a larger quantity than this may sometimes be allowed. Without pretending to speculate on the physiological reason for it, I must add my testimony to the fact, which has been observed by Dr. Radcliffe, that *saccharine* liquors and saccharine foods, except in very moderate quantities, decidedly disagree with neuralgic patients.

3. We come now to consider the external remedies for Neuralgia. Incomparably the most valuable of these is the use of so-called counter-irritation; that is, the application of various irritants to the skin. Valleix comes to the conclusion that there is no one remedy which approaches *blistering* in value, and (putting aside the recently discovered hypodermic treatment) that saying remains absolutely true at the present day. It is to be observed that Valleix latterly always employed the milder form of the flying blister. Such an application as this to the foci of pain must, if we consider it, be supposed to excite a directly stimulant effect upon the painful nerve. This kind of blistering, and the analogous use of mustard plasters, have always yielded good results, in my experience, solacing even when they did not cure. And in numerous early cases one or two flying blisters, applied successively over different points in the course of the painful nerve, have at once and permanently arrested the disease. It is a remedy which ought always to be tried in cases of any severity, especially if the subcutaneous injection of morphia and of atropine has failed. There is one method of blistering which I have recently tried with great success, viz., the application of a blister close to the spine, as nearly as possible opposite the intervertebral foramen from which the affected nerve issues. The effect produced is, I suppose, a reflex stimulation through the posterior branches. This method is of course not so applicable to Neuralgias of the fifth as to those of spinal nerves.

Yet even in these, blistering of the nape has sometimes appeared to do marked good—through the occipital nerve, I presume.

The application of various stimulating liniments and ointments to the skin of the painful parts is sometimes very useful. Of these the use of chloroform diluted with seven parts of oil or soap liniment is far the most efficacious. This produces no anæsthesia, but a mild stimulation. Strong *counter-irritation* may be produced by the use of tartar-emetic or of veratrine ointment.

Electricity.—The efficacy of various forms of electricity in Neuralgia is a large subject, and as yet, it must be owned, only very partially cleared up. The comparative merits of Faradisation and of the continuous current are hardly settled. But the weight of testimony is now in favour of the belief that in the majority of instances the continuous current is the most valuable.

As regards one or two points, one may speak with some confidence. In the first place I may say, after extensive trials of the ordinary rotatory (magneto-electric) machine for the *induced* current that this method of treatment is most unsatisfactory. I have never seen it produce, indisputably, good effects. Secondly, as regards that form of *continuous* current which is generated by Pulvermacher's chains, I am reluctantly obliged to give up the hope of doing any real service with it in Neuralgia, however great its utility is in other diseases. As is remarked by Dr. Althaus, the current generated by these chains is too irregular, and their activity is too soon exhausted for us to get a sufficiently uniform dose of electricity applied continuously for a definite period by their means.

It appears probable that we shall ultimately find that for neuralgic affections of all kinds the most useful form of electrical treatment is by the continuous current generated from a Bunsen's or a Daniell's battery; and that the three principles on which we must act in its use, are: 1. The maintenance of the current, with only a very few breaks, for a considerable time. 2. The application of the positive pole over the seat of pain. 3. The employment of a very low-tension current. I am informed by Mr. J. N. Radcliffe, whose experience in this matter is very large, that the use of this mode of electrization in Neuralgia is as yet, in his opinion, only beginning to be developed, but that it promises to effect great things. In short, my present opinion as to the value of electricity in Neuralgia may be thus expressed: that as used, up to the present time, it has achieved no results which entitle it to more than a third or a fourth-rate place among remedies; but that if the desideratum of a low-tension continuous current, which can be readily applied for long periods together, can be obtained by means of apparatus of moderate portability and cheapness, it is probable that we may obtain that which will equal or exceed in value any of the remedial measures which are at our disposal.

A few words must be given to the rather uninviting subject of the surgical treatment of inveterate Neuralgia. The section of a neuralgic nerve, or rather the excision of a piece, is still, I suppose, to be reckoned among the measures which it may be occasionally justifiable to employ. Nothing, however, either in the two cases of its use which I have seen, or in the records of similar operations, would lead me to recommend it in any case. The relief given is nearly always very transient: and, indeed, the nearly infallible certainty with which the pain returns in the central end of the divided nerve is only what I should expect from the many considerations which point to the central origin of the nerve as the most peccant part. With such remedies in our hands as the subcutaneous injection of morphia, &c. I cannot see that we need be tempted to perform such an operation for the sake of a temporary alleviation.

The removal of any distinct source of peripheral irritation by surgical means is quite another matter, and may be highly proper and necessary. Yet even here it is always necessary to calculate whether the shock of the procedure itself may not be injurious; and it will be desirable before inflicting it to fortify the system, as far as possible, with tonics; and sometimes to diminish the shock, not merely by giving chloroform, but by prolonging the chloroform narcosis by subcutaneous injection of a large dose of morphia. This precaution is especially advisable where we extract one or more carious teeth, which may seem to be keeping up neuralgic pain. Too often we find that the extraction has been in vain; and then, unless some such precautions have been taken, it may be discovered that the shock has aggravated the Neuralgia.

A most important subject with which I may conclude these remarks on treatment, is the employment of suitable *prophylactic* measures. First, as regards nutrition; it is absolutely necessary that this should be as abundant as may be possible without deranging the digestion. It must also contain a liberal allowance of fatty matters; no amount of dislike on the patient's part—and they often show great dislike—should induce the physician to give up this point. If one form of fat cannot be tolerated another must be tried; perseverance will, I believe, always bring success; and the effect of an improvement of this kind in the diet will rarely fail to tell upon the constitution, rendering the nervous system less sensitive to the ordinary exciting causes of neuralgic pain. Equally important is the avoidance of exposure to cold and damp air with insufficient clothing, for cold is much the most frequent immediately determining cause of neuralgic attacks. Flannel under-clothing, thick veils for the face, &c., are quite as important as any direct remedies. It cannot be doubted that everything which tends to set up the habit of pain, directly tends also to aggravate that obscure vice of the organism on which the disposition of Neuralgia depends, and *vice versâ*. Physical exercise must be so regulated that it may improve nutrition without inflicting severe fatigue. And as regards mental influences, which, unfortunately, are often beyond control, one can only say that the two extremes, of a specially laborious and exciting life, and an existence spent in the dreary monotony of idleness, are equally hurtful.

In the foregoing article I have followed the plan also adopted in my article on Alcoholism; namely, of stating my own view of the subject connectedly, and without pausing to answer all the statements and opinions of the numerous writers who differ from me. The necessary limits of a work like this "System of Medicine," makes it almost impracticable for an author to follow any other course with success, if he happens to hold a view of his subject which conflicts with, or differs from, the view of well-known authors on a considerable number of points. But the following selected list of the more important treatises will enable the reader to study the questions connected with this disease from every point of view. It has been my purpose to bring out clearly and consistently that view of Neuralgia which seems warranted by the majority of the facts recorded by others or observed by myself; and the result has been that I have given much prominence to the arguments for the existence of an element of organic change in the *centres* in all true Neuralgias. Those who desire, however, to hear all the arguments which can be urged for a chiefly or solely peripheral origin of Neuralgia will find abundant material in the undermentioned treatises: Trousseau, "Névralgie Epileptiforme," vol. i. of his "Clinique Médicale," 2me Edit.; "Névralgies," vol. ii. of the same work. (Trousseau's insistance on the constant presence of a painful "point apophysaire," seems to me an overstatement; but it is still more strange that this author should think its constant presence could consist with peripheral origin of Neuralgia.) Beau, Traité des Névralgies, Arch. de Méd. 1847. Brown-Séquard, Lectures on the Therapeutics of Nervous Diseases, Lancet, 1866, vol. i. See also his Lectures on the Physiology and Pathology of the Central Nervous System, 8vo. Philadelphia, 1860. Of authors who allow at least a large share in the production of many cases of Neuralgia to the centres, are Teale, Treatise on Neuralgic Diseases, &c. London, 1829. C. Handfield Jones, on Functional Nervous Disorders, London, 1864; also Lumleian Lectures, Med. Times and Gaz. 1865, vol. ii. But the most suggestive and important treatise, and one which has been unaccountably neglected, is the Observations on the Functional Affections of the Spinal Cord, by William and Daniel Griffin, London, 1834. I have, in the text, given Valleix just credit for laying the foundations of the current knowledge respecting Neuralgia; but it must be allowed that in the work of the Griffins, which is little known, there are the germs of a great improvement of that knowledge. Of essays which illustrate the serious secondary complications which may attend Neuralgia, the following may be mentioned, besides the treatises of Barensprung, of Notta, the work of the Griffins, and other papers already specified:—Schiff, Hyperæmia of the Eye, Ulceration of Cornea, &c. after a Wound of the Superior Maxillary Nerve; Untersuch, p. 116. Allcock, Disease of the Eye from injury to the Infra-orbital Nerve. Todd's Cyc. of Anat. and Physiology, vol. ii. p. 132. A great many cases also are quoted in Handfield Jones's Lectures on Functional Nervous Disorders, already cited.

It is only just to Dr. Handfield Jones to acknowledge that he has long advocated the opinion that nerve-pain is invariably, and in all its phases and consequences, an expression of debility of function; an opinion which has been strongly expressed also by myself not only in the present article, but in many other papers.

V.

LOCAL PARALYSIS FROM NERVE DISEASE.

By J. Warburton Begbie, M.D., F.R.C.P.E.

There can be no doubt that for a lengthened period, and till a comparatively recent date, the attention of pathologists was too exclusively directed to the great nervous centres in explanation of the causes of nearly all nervous disorders, including paralysis. So much so was this the case as fully to justify the language employed by the late Dr. Graves, of Dublin. "If," says he, "you examine the works of Rostan, Lallemand, Abercrombie, and those who have written on diseases of the nervous system, you will find that their inquiries consist in searching after the causes of functional changes, either in the cerebrum, cerebellum, or spinal marrow, forgetting that these causes may be also resident in the nervous cords themselves or their extremities, which I shall call their circumferential tracts."[1] Since 1843, however, when the first edition of Graves's lectures appeared, it has been satisfactorily determined by physiological investigation and by the careful observation of disease in numerous examples, that paralysis, or the loss of the power of motion, may result from one or other of two causes. It may depend either on a central nervous lesion, that is, a lesion of the Brain or Spinal Cord, or on an abnormal condition of a particular nerve in some part of its course. It is with the latter, as giving rise to a local form of paralysis, that we are now exclusively concerned. We are abundantly familiar with the effects of mechanical injury as applied to nerves. When a nerve is cut across there results immediately a paralysis of the parts below the section supplied by that nerve. Further, if a nerve be included in a ligature, or subjected from any cause to much pressure, a similar result is produced. The paralysis of the arm caused by pressure on the axillary plexus of nerves, is an excellent and familiar illustration of injury so occasioned. It is thus described by Dr. Todd: "A man gets intoxicated, and falls asleep with his arm over the back of a chair; his sleep under the influence of his potations is so heavy, that he is not roused by any feelings of pain or uneasiness, and when at length he awakes, perhaps at the expiration of some hours, he finds the arm benumbed and paralyzed. It generally happens that the sensibility is restored after a short time, but the palsy of motion continues. Cases of this kind sometimes derive benefit from galvanism, but if the pressure which caused the paralysis has been very long continued, they seldom come to a favourable termination. Nerve-tissue is one which never regenerates quickly, and seldom completely, so that great or long continued lesion of its structure is not likely to be removed."[1] Although by no means so distinctly witnessed as the result is, in the class of cases now referred to, there seems no reason to doubt that, equally with mechanical injury, interference with the proper nutrition of nerves may lead to forms of local palsy. Illustrations of such occurrences will be adduced more especially when directing attention to one of the most interesting of all the varieties of local paralysis, namely, facial palsy. Again, familiar as we are with the action of various poisons, such as alcohol, opium, chloroform, on the great nervous centres, and on the same portions of the nervous system of certain poisons formed in the living body, as urea, and the morbid materials in rheumatism and gout; having also important knowledge regarding the influence which is exerted on the nervous and muscular systems generally, but especially on the nerves and muscles of the upper extremities by the poison of lead, we cannot hesitate to account, in a manner closely similar, for the other forms of local paralysis which from time to time present themselves to our notice.

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[1] Clinical Lectures on the Practice of Medicine, Lecture xxxiii.

Dr. Todd alludes to cases of local paralysis occurring in states of the constitution which, if not rheumatic, are at least allied to it, and associated with imperfect action of the kidneys. "Of this," he says, "the following affords a good example: A medical man, ætat. 53, extensively engaged in practice in the county of Bucks, applied to me in August, 1847, with complete paralysis of the deltoid muscle. He was a stout, full man, tall, of large build, and very active in his habits; fed well, and drank beer, but not to excess. He had been subject to a shifting neuralgia of the scalp, and to a discharge from the right ear, where he thought the tympanic membrane was destroyed; he was deaf on that side. Six weeks before he came to me he suffered from pain in the left side of the neck and shoulders, followed by complete paralysis of the left deltoid muscle and weakness of the whole arm. On examining, I found a total inability to raise the left arm to a right angle with the trunk, or to perform any of those actions which are usually effected by the deltoid muscle, which was very much wasted. He could, however, grasp perfectly with the left hand, and execute all the other movements of the arm and forearm. There was some degree of numbness of the arm. There were no symptoms distinctly referable to the head. His tongue was coated; appetite good; the discharge from the ear had ceased. The urine was pale, of low specific gravity, and contained albumen in small quantity. I viewed the case as one of local palsy, connected with a deranged state of system, rheumatic or gouty. I regulated his diet, and gave him small doses of the mineral acids. After a fortnight of this treatment he improved considerably, and could raise his arm slightly. The albumen in the urine had much diminished; and crystals of lithic acid were precipitated. He was now ordered three grains of iodide of potassium, with ten minims of liquor potassæ thrice daily. He only followed this treatment for ten days, as the iodide of potassium purged him. Still, he was improving, I continued the liquor potassæ, and advised galvanism to the muscle. This plan was diligently pursued for a fortnight, at the end of which time he had so far improved that he could raise his arm nearly to a right angle, he could put on his coat, and tie his cravat; and in three weeks more he was quite well. All signs of albumen had disappeared from his urine."[1] The writer's experience has furnished cases bearing a remarkable resemblance to the one now quoted. He calls to remembrance more especially that of a young and plethoric as well as highly rheumatic female, who suffered from paralysis, succeeding severe pains of the left lower extremity, and in whom a plan of treatment which secured the copious discharge of urine, previously much diminished as well as disordered, and free action of the skin, proved eminently successful in removing the palsy of the limb. Besides the gouty and rheumatic poisons, it is well to keep in view the very decided action of the syphilitic in inducing this among other local disorders. No one calls in question the injurious effects which are capable of being produced on the nervous centres by the syphilitic poison; there is, however, good reason to believe that some local palsies are thus created. The writer has been able to trace the occurrence of paralysis of the portio-dura, of paralysis of the third pair, as shown by a marked ptosis; and also of palsy of the limbs, slight although threatening, to the same cause, when neither brain nor spinal cord appeared to be implicated. And it is probable that the experience of many physicians has not been dissimilar to his own, in finding the iodide of potassium administered in large doses, and steadily persevered with, a most useful remedy in such cases, relieving the palsy as effectually, as it is so frequently the means of doing, the neuralgic and wearing-out headache, or the painful node on the shin-bone, which are evidently due to the same cause. Allusion has been made to the influence of direct pressure external to the body, in producing such injury of nervous structure as leads to a form of local paralysis. Palsy thus induced is generally merely temporary in duration. Tumours within the body, involving nerves, are frequently the direct occasion of local palsies. No more interesting variety of such palsy exists than that which is due to the interference with the recurrent or motor laryngeal nerve produced by an aneurism of the arch of the aorta, or by a cancerous mediastinal tumour. Well-marked atrophy of the muscles of one side of the larynx has under such circumstances been found. The dyspnœa, which is induced by the implication of the vagus, or as sometimes happens of the phrenic nerves in strumous or tubercular tumours, is abundantly recognized since the writings of Risberg and Ley. There seems reason to believe likewise that pressure upon or other injury of some parts of the sympathetic nervous system may occasion local palsies. Of this the paralysis of the radiating fibres of the iris caused by cutting the sympathetic in the neck in Budge and Waller's experiments, but especially a similar contraction of the pupil to that physiologically produced, due to the pressure of aneurism projecting into the neck or malignant tumour similarly situated, are now quite familiar to the physician.

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[1] **Clinical Lectures on Paralysis, certain diseases of the Brain, and other affections of the Nervous System, Lecture i.**

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[1] Loc. cit., p. 72.

Attention will now be directed to some of the more important varieties of local palsy dependent on nerve disease, and first to *Facial Palsy*. This most interesting local paralysis is known under different names, of which the more commonly employed are *Facial Hemiplegia*, *Histrionic Paralysis*, *Bell's Palsy*, and *Paralysis of the Portio-dura*. Occurring as it usually does on one side of the face only, nothing can be more striking than the peculiar features of the disease. This is owing to the palsied condition of a few or all of the superficial muscles—the muscles of expression—on the affected side, and the heightened antagonism of muscular action on the unaffected side. The patient cannot knit the forehead,[1] neither can the eyebrows be raised or drawn together. The eye remains open, as the power of closing the lids is lost, and their blinking movement no longer exists. This open condition of the eye, seen both in waking and sleeping, and which is due rather to the increased action of the levator palpebræ muscle than to the palsy of the orbicularis palpebrarum, is a characteristic, it has indeed been styled a pathognomonic feature of facial palsy.[2] The ala nasi is dependent, and on full inspiration on smelling or blowing the nostrils there is no expansive movement. The angle of the mouth hangs down. Further, the patient cannot whistle, for he is unable to purse up his mouth for that purpose, and for the same reason he can neither spit, nor can he distend the buccal cavity with air, or blow wind from the mouth. Pronunciation of labials is notably impaired. The saliva and fluids frequently trickle from the mouth. In mastication portions of food are apt to collect between the cheek and gums, as the support of the lips and cheeks necessary for its proper performance is lost. Let the patient laugh, cry, sneeze, yawn, or be the subject of any violent emotion, and the distortion of the features becomes much more conspicuous, the face being forcibly drawn to the sound side. Motionless and void of expression is the one side, contrasting in a very remarkable manner with that on which intelligence remains visible and power of movement unaltered. Trickling of the tears down the cheek, owing to the immobility of the lower eyelid, with consequent dryness of the corresponding nostril, and redness of the conjunctiva, it may even be severe conjunctivitis, determined by the operation of cold, dust, or other external influences on the constantly exposed eye, are among the accompanying phenomena of this palsy.

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[1] In alluding to the smoothness of the brow in the aged, who are affected by facial palsy, owing to the disappearance of all wrinkles, Romberg facetiously observes, "für alte Frauen kein wirksameres Cosmeticum existirt."

[2] "The leading character of cases of facial palsy," writes Dr. Todd, "is the inability to close the eyelids, from paralysis of the orbicularis palpebrarum; this is the pathognomonic sign which determines the peculiar nature of the palsy, and distinguishes it from the most serious form of facial palsy, which is dependent on disease of the brain and palsy of the fifth or third nerve." (Clinical Lectures, Lecture iv.)

To Sir Charles Bell we are indebted for pointing out the true nature of this affection. He showed that one nerve only was involved, that the muscles governed by the portio-dura of the seventh pair were alone affected, that strictly it is a local palsy. The sensibility of the face is usually unimpaired; a slight affection of the filaments of the fifth may, however, cause a little facial pain, but that is to be accounted rare. In instances of long standing facial palsy, Romberg has drawn attention to the relaxed and flaccid condition of the skin covering the affected muscles, while Dr. Todd has insisted on increasing flaccidity of the cheek, and especially a rapid development of that condition, as a symptom of unfavourable omen as regards the patient's prospects of recovery. But while this form of local palsy is clearly dependent on lesion of one nerve only, there is reason to believe, as Romberg has more particularly shown, that its features are subject to modification, according to the precise seat of the disease. That may be *peripheral* or *central.* Not only so, but the diagnostic marks may vary under the former head, according as the superficial distribution of the portio dura, or the nerve as it passes through the temporal bone or the nerve within the cranium and near its central origin, is affected. Viewing these very briefly in their order, it may be remarked—that, *facial palsy, due to an affection of the superficial distribution of the nerve*, is generally met with as the result of exposure to cold.[1] "A very common cause of this palsy," writes Dr. Todd, "is the influence of cold; as by exposure at an open window, in a coach or railway carriage, to a current of cold air."[2] "A blast of cold air on one side of the face," remarks Dr. Graves, "has been known to cause paralysis and distortion of several months' duration."[3] External injuries, such as blows on the cheek, and surgical operations on the face, have been followed by this form of local palsy. Of the cases which occur, there are not a few in which no traumatic cause can be found, neither can any marked exposure to cold be traced. In such circumstances it is proper to make a very careful inquiry into the condition of general health of the sufferer, when, it is not unlikely that the connection of the palsy with a gouty or rheumatic taint may be satisfactorily established. Dr. Todd, alluding to the dependence of periodical neuralgic affections on the determination of some poison to a particular nerve, as the paludal poison or some matter generated in the system, expresses the opinion that morbid matters may affect a motor nerve just as they affect a sensitive, causing in the former case paralysis, as in the latter they determine neuralgia.

Facial Palsy caused by an affection of the portio-dura in its passage through the temporal bone.—The connection of this paralysis with local strumous affections in children is well known. These may be simple and easily remediable, as for example the parotid and more general glandular enlargements consequent on measles, scarlatina and other disorders; but of much more serious nature is the otitis resulting in caries of the petrous portion of the temporal bone. Here the palsy is associated with deafness, and very probably also with purulent discharge from the meatus. Direct violence, likewise, as in a case related by Sir Charles Bell, in which a pistol shot through the ear had splintered the bone, and torn the nerve in its osseous canal, may of course determine the palsy. The diagnosis of the disease or injury affecting the nerve, in its passage through the bone, rests, according to Romberg, not only on the coexistence of such phenomena as otorrhœa, removal of necrosed portions of bone, perhaps of one or other of the small bones of the ear, and deafness—symptoms which are not likely to occur in cases of simple peripheral facial palsy, but further, upon certain peculiarities in the observed paralytic phenomena. One of these is the diminution of taste on the side of the tongue corresponding to the palsy, another is a unilateral paralysis of the velum palati. On the latter point the statements of writers have been very contradictory. Romberg remarks that in four patients afflicted with facial palsy he has noticed the paralyzed condition of the velum palati, the uvula, having a slanting direction, being arched and the tip pointed to the paralyzed side. While failing to offer any explanation of the peculiar position of the uvula, Romberg evidently attaches very great importance, in a diagnostic point of view, to the palsied condition of the velum, and the marked curving of the uvula; concluding, from their existence, that the seat of the disease *must* be in the petrous portion of the temporal bone. And he again emphatically repeats when the disease is in the peripheral distribution of the nerve, the velum is not affected, "wovon ich mich in vielen Fällen überzeugt habe." It is the implication in the diseased condition, of whatever nature that may be, of the nervus petrosus superficialis major, of Arnold—which taking its origin from the knee-shaped bulb on the trunk of the portio-dura as it lies in the Fallopian aqueduct, and which communicates with Meckel's ganglion, whence the muscles of the palate derive their nerves—that in the view of Romberg causes the displacement of the velum and uvula. Dr. Todd, while admitting the occasional occurrence of this phenomenon, combats the notion of Romberg, and maintains that undoubted instances of disease of the aqueduct, causing paralysis of the nerve, are met with, in which affection of the velum does not exist. In his own experience the symptom in question was of very rare occurrence, and he regarded it as a coincidence. Since the publication of the views of the authors now referred to, the paralysis of the palate in facial palsy has received renewed attention from M. Davaine and Dr. Sanders. The former recorded one case of unilateral paralysis of the palate, in connection with facial palsy of right side, observed by himself, and has commented on several instances furnished by Romberg and others. His description of the phenomena he observed is given as follows: "The velum palati is not regular; the arch formed by the right anterior pillar is less elevated than the left. The posterior pillar of the same side descends directly downwards, without being curved like that of the other side. The uvula is bent like a bow; its point is directed forwards and towards the paralyzed side, while its base is carried a little towards the sound side. The patient's voice is slightly nasal."[1] Dr. Sanders, in a valuable paper,[2] gives an interesting case of paralysis of the velum in connection with facial palsy of the right side, and enters at some length into a consideration of the mechanism of the deviation of the palate. Dr. Sanders is satisfied that a partial hemiplegia of the palate does exist in connection with facial palsy, and, like it, is dependent on affection of the portio-dura. He believes that this form of palatal palsy consists in a vertical relaxation or lowering of the corresponding half of the velum palati, with diminished height and curvature of the posterior palatine arch, on the paralyzed side, and that it is due to paralysis of the levator palati—that muscle and the azygos uvulæ, also supplied by the seventh pair, being the only muscles affected. Among several conclusions at which Dr. Sanders has arrived, the following appear to be specially important: that the partial paralysis of the velum in facial palsy, due to implication of the levator palati muscle, is by no means so rare as palsy of the velum (hitherto not accurately described) has been generally supposed; and that the prognosis is not necessarily rendered more unfavourable in facial palsy when the palate is implicated.

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[1] Some writers speak of facial palsy as specially a disease of northern climates. Thus, Joseph Frank, after alluding to the collection of cases by various authors, remarks, "Nosque plurima vidimus. Morbus iste in regionibus septentrionalibus tam communis est, ut spatio quindecim annorum viginti duo mihi obvenerint exempla." (De Paralysi, Praxeos Medicæ Universæ Præcepta.)

[2] Loc. cit., p. 69.

[3] Loc. cit., p. 380.

The lesion in facial palsy may exist at the cerebral origin of the seventh pair of nerves. We are not, however, called upon to consider this variety of facial palsy: suffice it to say, that its existence may be determined, and the differential diagnosis, between it and the other forms—already briefly considered—established, by the occurrence, sooner or later, of symptoms due to the implication of other nerves, such as deafness, strabismus, ptosis, and anæsthesia. While, either the presence of inflammatory products, or apoplectic extravasations in the vicinity of the pons Varolii may be the precise lesion which gives rise to the palsy, the probability is that, in such cases, a tumour of one nature or other, and subject to gradual extension, exists.

The duration of Facial Palsy is subject to considerable variety according to the precise seat and nature of its determining lesion. Dr. Todd remarks that "it rarely, if ever, lasts a shorter time than ten days, whilst it very often extends to as many weeks; perhaps three or four weeks may be assigned as an average duration for the non-traumatic cases; and Romberg warns us not to expect its duration to be brief. It is in those cases which have been evidently connected with rheumatism that he has found the paralysis least enduring.[3]

The writer has seen simple cases of the disease, in so far as their cause was concerned, lasting a very lengthened period, many months, and even a year.

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[1] Gazette Médicale de Paris. 1852.

[2] Edinburgh Medical Journal, August, 1865.

[3] "Die Dauer der mimischen Gesichtslähmung ist selten kurz. Am kürzesten fand ich sie bei der rheumatischen: doch habe ich sie auch hier in günstigen Fällen nur selten unter sechs Wochen wahrgenommen, einmal sah ich die Heilung innerhalb acht, ein andermal in vierzehn Tagen." p. 664.

It is incumbent on the physician to be very careful in offering an opinion as to the prognosis in cases of facial palsy: that must always be founded on a consideration of the probable cause. Those cases are nearly certain to terminate favourably in which cold or rheumatism are to be looked upon as the determining agents. On the other hand, when the palsy has been due to mechanical injury the prognosis cannot be favourable, and this very specially in those instances where a division of the nerve has been caused. We cannot be too careful in the expression of our opinion in cases characterized by nerve disease within the temporal bone. The records of medicine contain reports of such, which have given rise to meningeal inflammation, intracranial, even cerebral and cerebellar abscess and death.

If prognosis is to be guided by a just consideration of the causes, so also is the treatment of facial palsy when amenable to cure. The remedial measures at our disposal may be conveniently classed under the heads of internal and external agents. In the use of the former, regard should always be had to the diathetic condition of the patients, rheumatic, gouty, strumous, syphilitic, anæmic, or suffering from the injurious influence of a paludal poison. We are disposed to think that this is one of the forms of local palsies in which the loss of power may be due to changes in nerve structure determined by neuritis. In such examples, and still more so if there be reason to conclude that a syphilitic taint is in existence, iodide of potassium will prove a most serviceable remedy. We have ourselves found it to be so. The iodide should be administered in doses of five grains twice or thrice daily, simply dissolved in distilled water. The efficacy of the remedy is secured by its being administered while the stomach is empty, but food may be taken very shortly thereafter. Should a rheumatic or gouty habit be found in connection with the palsy, alkaline remedies, colchicum, and lemon-juice, may exert a beneficial influence, and so probably will quinine or arsenic in the not unknown examples of the disease allied to intermittent fevers. Mercury in the form of blue pill has been extolled by several practitioners. Sir Thomas Watson counsels the exhibition of mercury "so as just to touch the gums," adding, "I should always take this precaution, lest any effusion of lymph should cause abiding pressure on the nerve."[1] Iron is likely to be useful when an anæmic condition of the system exists. The muriate of lime, the iodide of iron, and cod-liver oil, are available remedies when a strumous cachexia obtains. The writer can bear a decided testimony to the therapeutic value of strychnine as an internal remedy in one long-existing instance of the disease, which had bid defiance to the more ordinary remedies; he cannot, therefore, coincide in the observation of Dr. Todd, that "Strychnine is of no use in such cases."

As to external remedies. Blisters, strongly recommended by some physicians, are discountenanced by others, on the ground that they sometimes cause enlargement of the neighbouring glands, which by pressure may in their turn injuriously influence the nerve twigs. Local hot fomentations and the application of leeches are very useful remedies at an early period of the disease, the employment of the latter being generally limited to persons of full habit, and otherwise in the enjoyment of fair health. The endermical application of strychnine—over a blistered surface—the use of various stimulating liniments, and particularly, in the writer's opinion, galvanism, are the more approved remedies in cases which have lasted for a little time.

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[1] Lectures, vol. i. p. 563.

Before concluding our notice of facial palsy, we must add a few remarks on the occasional occurrence of the disease on both sides of the face, and very briefly refer to the statements of Dr. Todd respecting the integrity of the seventh pair in cases of cerebral hemiplegia, a view which has recently been ably controverted by Dr. Sanders.

Double Facial Paralysis.—This is unquestionably a rare affection, and especially rare when the double palsy is solely dependent on nerve disease. Romberg and Dr. Christison[1] refer to cases of what may be styled simple bilateral paralysis of the face, while the seventeenth case in Dr. Todd's lectures is a very remarkable example of paralysis of the portio-dura on both sides connected with affection of the portio-mollis; for the patient was "perfectly deaf in both ears;" and the loss of function of both branches of the seventh pair evidently resulted from disease in the temporal bone. In addition to the writers already named, M. Davaine has especially directed attention to the subject in a valuable memoir, the title of which is given below,[2] and to which Professor Gairdner,[3] of Glasgow, in giving an account of a very interesting case of double facial palsy, has referred. Dr. Gairdner considered the paralysis to be due to cold, and connected with rheumatism of the external branches alone; and in the course of his paper he alludes to another case of double paralysis of the portio-dura evidently connected with syphilis. In the latter case iodide of potassium, with iodide of mercury and corrosive sublimate, were employed in alternate doses, and the result was an excellent recovery. One example of double facial palsy has occurred under the writer's observation; it was associated with tubercular disease within the chest, and the patient, a man of thirty years of age, subsequently died of what appeared to be strumous meningitis. Unfortunately an examination of the body after death was not permitted. This is scarcely the opportunity for entering on a consideration of the view which was so strongly entertained and expressed by the late Dr. Todd, that the seventh nerve was very rarely involved in facial palsy depending on cerebral disease, and that the affected facial muscles were those governed by the fifth pair. It will, however, tend to complete the brief exposition of facial paralysis now given, if we state in this connection, that there is, in our opinion, no reason to doubt that the view taken by Dr. Todd, and in which several systematic writers in this country have closely followed him, is erroneous, and that, on the other hand, the current doctrine on the Continent, and which has been recently ably unfolded and extended by Dr. Sanders, is correct, viz: "that in cerebral hempilegia, as in peripheral face palsy, it is the motor seventh nerve which is affected."[1]

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[1] Monthly Journal of Medical Science, 1850.

[2] Mémoire sur la Paralysie générale ou partielle des deux Nerfs de la septième paire: lu à la Société de Biologie (Mars, 1852) par M. C. Davaine. See also Gazette Médicale de Paris, 1852.

[3] Clinical Observations, Lancet, May 18, 1861.

Disease of other of the motor cerebral nerves than the portio-dura may likewise determine local palsies. A short reference to such may be made here.

Paralysis due to disease of the third pair of nerves. (Oculo motor.) Ptosis or blepharoplegia, the falling down of the upper eyelid, is the notable feature of this affection. When this is due to a cause seated within the cranium, such as an inflammatory exudation, or a tumour, it is almost invariably accompanied by palsy of those muscles of the eyeball, and those fibres of the iris which are likewise governed by the motor oculi. Hence in such cases, and they are far from being uncommon, external squint and dilatation of the pupil are associated with the ptosis. Not only so, but other adjacent cerebral nerves are for the most part implicated, while the indications of the existence of some formidable cerebral lesion are under such circumstances not likely to be absent. On the other hand, when the determining cause of the local paralysis is peripheral in its seat, the ptosis exists alone. Romberg remarks that rheumatism may be the cause of paralyzing the palpebral branch of the motor oculi, although not so frequently as is the case with the facial nerve; and he distinctly states that when so induced, the ptosis occurs without the participation of the muscles of the eyeball, and the contractile fibres of the iris.[2] The writer remembers to have seen this dependence of ptosis on rheumatism illustrated in the case of a young lady, who after having frequently suffered from distinct rheumatic affections, became within a limited period the subject of facial palsy and ptosis, the immediate peripheral impression on both the seventh and third nerves being evidently due to severe cold. A complete and speedy recovery occurred after the local application of warmth and the use of anti-rheumatic remedies. M. Marchal de Calvi has directed attention to the occurrence of oculo-motor paralysis, consequent on very severe tic of the face. M. Marchal, and likewise the late M. Jobert de Lamballe, found the muscles of the eyeball affected as well as dilatation of the pupil, the vision[3] disordered, and insensibility of the conjunctiva in this affection. Such cases, however, are rather illustrative of the reflex form of paralysis, our knowledge of which has been of late greatly increased by the observations of M. Brown-Séquard and others.

In the same way as peripheral affection of the oculo motor nerve exists, so may local paralysis result from disease of the *fourth pair* (*trochlear*), and of the *sixth pair* (*abducens*). Such are, however, much less frequent in their occurrence, and specially so, as Romberg has observed, that resulting from affection of the abducens. The author just named has made reference to a case seen by Dr. Dahling, and published by Stromeyer, in which the facial and abducens nerves on the left side were paralyzed in consequence of a sudden cooling of the heated face.

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[1] On Facial Hemiplegia and Paralysis of the Facial Nerve, by Wm. R. Sanders, M. D. Lancet, 1865. See on the same subject Dr. Hughlings Jackson in Clinical Lectures and Reports of the London Hospital, 1864.

[2] "Der rheumatische Anlass paralysirt, obgleich nicht in solcher Frequenz wie den Facialis, den Ramus palpebralis des Oculomotorius und hat eine einfache Blepharoplegie ohne Theilnahme der Augenmuskeln und der contractilen Irisfasern, nach der Norm der isolirten Leitung, zur Folge." (Augenmuskellähmung.)

[3] Mémoire sur la Paralysie de la troisième paire consécutive à la Névrose de la cinquième. (Archives Génerales de Médecine. Juillet, 1846.)

Palsy of the tongue from affection of the hypoglossus nerve in its distribution is of great rarity, offering a marked contrast to the frequency with which a central lesion gives rise to the same form of local palsy.

The lesser branch of the fifth pair may be the seat of disease, and consequently give rise to masticatory palsy. The movements of the face in mastication on one or on both sides, as the case may be, are thus arrested or impeded. The temporal and masseter muscles are readily recognized to be inactive; and their condition when the disease is unilateral offers to the touch a marked contrast with the firmness of the same muscles on the unaffected side during the process of mastication. This variety of local palsy, when due to disease of the nerve, is generally caused by tumour of the dura mater, or disease of the sphenoid bone, or such a morbid condition of the Casserian ganglion as compresses the nerve itself.

VI.

LOCAL SPASMS.

By J. Warburton Begbie, M.D., F.R.C.P.E.

The term *Spasm* (*spasmus*, from σπάω, I draw) is used to indicate the sudden and involuntary contraction of muscular fibres, or of muscles. *Hypercinesis* (ὑπὲρ, in excess, κίνησις, motion) is likewise employed in a sense precisely similar. This peculiar vital phenomenon may be general or local, involving apparently all, or nearly all, the muscles of the body, or, on the other hand, limited to a few muscles, it may be to one.

In every occurrence of Spasm there is increased action of the motor nerve, the result of which is the sudden contraction of muscular fibres, the act itself being wholly removed from the control of the will. The expressions *clonic* and *tonic* are used, the former to denote a Spasm which is characterized by rapidly alternating contraction and relaxation of muscular fibres, while the latter implies the existence of the contractions for a certain time, and of this condition rigidity of the affected muscles is also an invariable feature.

Attention is now to be directed to *local* as distinguished from *general* or universal spasms. To the latter, the term *convulsions* is correctly applied.

Local Spasm is not necessarily attended by pain, but it generally is so, and as expressive of painful Spasm we find a suitable term in *cramp* (Saxon *kramp*). The term *cramp* is most frequently applied to painful muscular contraction in the extremities, and to the same phenomenon affecting the stomach or intestines, and also the heart. Such pain as occurs in connection with Local Spasm is in all probability due to injury done to the sensory nerves supplying the muscle during its violent contraction.

Both kinds of muscular fibre, both orders of muscles, the voluntary and involuntary, are liable to be affected by Spasm. Of the former the most familiar illustration is cramp in the extremities. Of the latter are cardiac and intestinal Spasms. Romberg has pointed out that, as a general rule, when the muscles of animal life, those under the control of the cerebro-spinal nerves, are affected by Spasm, the fibres exhibit a uniform contraction throughout their whole extent, while, on the other hand, the muscles of organic life, over which the sympathetic system is dominant, when similarly affected manifest successive contractions, moving like waves.[1]

It need scarcely be observed that, although the abnormal condition now described as Spasm is evidenced by a disorder of muscular fibres or muscles, the cause of this disturbance is always resident in the nervous system. There is a very important and interesting variety in the connection which subsists between the nervous stimulus and the phenomenon of muscular contraction. The former may be central, that is, operating directly on the great nervous centres, the brain, or spinal cord; or, and in the case of Local Spasm this is far the more frequent, the irritation is peripheral, and consequently the induced action is reflex.

Our knowledge of the causes of Local Spasms is as yet far from being perfect, and in not a few instances the attempt to determine these, notwithstanding the most careful inquiry, signally fails. The etiology of general convulsive disorders is indeed more advanced, and may serve to elucidate doubtful points in relation to the more limited and less serious affection.

The late Dr. Graves of Dublin was one of the earliest to direct attention to the frequency with which various nervous affections, of which Spasm is one, and not the least interesting, are dependent on reflected nervous irritation. He has graphically described the sudden and complete relief afforded to a young lady who had suffered most severely from spasmodic cough after the discharge of a tapeworm, which had been effected by a large dose of oil of turpentine with castor oil.[2] The subject thus adverted to by Graves has more recently attracted the attention of several competent observers, more especially of M. Davaine in France,[3] and Dr. Heslop[4] of Birmingham. Their statements show that the presence of worms in the intestinal canal is a frequent cause of remote nervous phenomena, including Spasms, and throw doubt on the assertion of Romberg, that the influence of worms in producing convulsions has been formally over-estimated. Again, a careful study of the whole phenomena in that most interesting disease, *spasmodic asthma*, has led to the conclusion that the spasmodic affection in it, seated in the smaller bronchial tubes, may be induced by an irritation of the nervous system, which is either centric or eccentric. In the former case the irritation is in the nervous centres themselves, the brain, or spinal cord. In the latter, and it is by far the more common in its occurrence, the irritation is applied at a distance from the nervous centres. This subject has been very fully and ably illustrated by Dr. Hyde Salter, in whose work examples the most interesting and conclusive as to the essentially nervous origin of the asthma are to be found.[1]

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[1] Romberg, Lehrbuch der Nervenkrankheiten des Menschen. Hypercineses, Krämpfe.

[2] Clinical Lectures, Lecture xl., Bronchitic Asthma, Cough.

[3] Traité des Entozoaires. Paris, 1860. M. Davaine remarks: "Tous les organes, pour ainsi dire, peuvent ressentir l'influence sympathique des vers du canal intestinal: la fausse perception des odeurs, la dilatation de la pupille, l'amaurose permanente ou passagère, l'exaltation de l'ouïe, la perversion du goût, le prurit et les fourmillements à la peau témoignent de l'action sympathique des vers sur les sens; d'un autre côté, la somnolence ou les vertiges, les rêves fâcheux, *les spasmes*, les douleurs vagues, la toux, la dyspnée, les palpitations, les intermittences du pouls, la faim insatiable ou l'anorexie, la salivation, la qualité des urines, l'amaigrissement témoignent également de leur action sur le système nerveux, sur les organes de la respiration, de la circulation, de la digestion, sur les sécrétions, enfin sur la nutrition."—Page 48.

[4] The Cerebro-spinal Symptomatology of Worms, especially Tapeworms. Dublin Quarterly Journal of Medical Science, vol. xxvii. 1859.

In treating of what may be styled central asthma, Dr. Salter gives, among others, the following case: A man about fifty was subject to epilepsy. His fits had certain well-known premonitory symptoms, and occurred with tolerable regularity about once a fortnight. On one occasion his medical attendant was sent for in haste, and found him suffering from violent asthma. The account given by his friends was, that at the usual time at which he expected the fit he had experienced the accustomed premonitory symptoms, but instead of their being followed as usual by the convulsions, this violent dyspnœa had come on. Within a few hours the dyspnœa went off, and left him as well as usual. At the expiration of the accustomed interval after this attack, the usual premonitory symptoms and the usual epileptic fit occurred. On several occasions this was repeated, the epileptic seizure being as it were supplanted by the asthmatic. Nothing seemed to be amiss with the lungs either before or after the attack. Dr. Salter truly observes, that such a case as this appears to admit of only one interpretation, that the particular state of the nervous centres that ordinarily threw the patient at certain times into the epileptic condition, on certain other occasions, from some unknown cause, gave rise to bronchial spasm; that the essential diseased condition was one and the same, but that its manifestation was altered, temporary exaltation and perversion of the innervation of the lungs in the asthmatic paroxysm supplanting unconsciousness and clonic convulsion in the epileptic seizure. It has occurred to the writer to witness in one instance an alternation of phenomena bearing a close resemblance to that observed by Dr. Salter. The patient, a young man, was admitted to the Royal Infirmary of Edinburgh, on the recommendation of Dr. Turner, of Keith. He had for several months previously been subject to cerebral attacks, attended by loss of consciousness, and occasionally by convulsive movements of the muscles of the face and extremities. These continued to occur during the patient's residence in the hospital, observing for a time the same periodicity which had antecedent to that time always distinguished them, when, on three separate occasions, and in the most distinct manner, an attack of asthma took the place of the more manifest cerebral disorder. The loss of consciousness and convulsive movements again recurred in a modified form: and after the lapse of several weeks, during which various remedies were employed, the patient left the Infirmary to return home, his condition having materially improved. Besides instances of the nature just alluded to, there are other examples of asthma, which, although in by no means so distinct a manner, must be held as caused by some impression taking origin in the nervous centres, and responding in a mysterious manner with certain feelings or emotions of the mind; such are the cases in which fear, excitment, and fatigue operate.

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[1] On Asthma: its Pathology and Treatment. London, 1860.

Now, passing to a very brief consideration of *bronchial* Spasm, dependent not on centric but *peripheral* irritation. Dr. Salter speaks of three degrees of remoteness of the application of the stimulus producing asthma, and consequently of three groups into which the reflex cases of the disease may be divided: 1st. Those in which the source of irritation is alimentary, and chiefly gastric. 2d. In which the irritation is more remote, but still confined to the organic system of nerves, as, for example, asthma produced by a loaded rectum, by the presence of tapeworm, or ascarides. 3d. Cases in which the cerebro-spinal system is the recipient of whatever irritation is the cause provocative of the attack, as, for example, was illustrated in a most remarkable instance recorded by Dr. Chowne, where the application of cold to the instep produced in the most direct manner the asthmatic paroxysm. Looking to the first, and by a long way the largest, of these three classes of cases, the nerve irritated is the gastric portion of the pneumogastric; through it the stimulus reaches the medulla oblongata, and from that portion of the nervous centre it is again transmitted to the bronchiæ by the pulmonary filaments of the same nerve. It is indeed of the highest importance in a therapeutical point of view to notice this chain of connection. We are thus called to recognize in the paroxysm of asthma a disease not unfrequently originating in disorder of the stomach; and it may be assumed as a correct conclusion, that a large proportion of the sufferers from this severe spasmodic affection are to be relieved by attention being given to their diet and regimen. But even here we should be adopting too limited a notion of the influence of the digestive and assimilating processes in the production of asthma did we conclude that those cases alone are examples of this nature, in which bronchial spasm is induced by reflex stimulation directly through the important nervous trunk—the pneumogastric. There are over and above, numerous instances in which this direct communication of the influence exerted will not apply. In such the occurrence of the Local Spasm does not so speedily follow the introduction of food into the stomach as in many of the former cases, and therefore we must look for a somewhat different explanation. We find it in the disordered condition of the blood; the faulty assimilation is no doubt the primary cause of this, but the unhealthy blood is in such instances the direct irritant; by its operation on the nervous distribution through the lungs the bronchial Spasm is caused. This humoral origin of asthma affords in all probability the most satisfactory explanation of the frequent occurrence of the nervous disorder in persons who are gouty. The accuracy of the view thus expressed is further evidenced by the circumstance that such sufferers are benefited by a plan of treatment which tends to eliminate the essential poison of gout from the system; often, indeed, are benefited by such a plan of treatment only. In these cases remedies need scarcely be directed to the chest: it may be possible to relieve, it is impossible to subdue, by antispasmodics, a bronchial spasm so induced; but on the other hand, by acting freely on the great emunctories of the body, on the skin and kidneys, the disease is to be met and overcome.[1]

Allusion has been made to the production of bronchial Spasm as determined by reflex irritation, and also by an impure condition of the blood. The same precisely holds true of *cardiac* Spasm. The irregular, unrhythmical, and painful contractions of the heart known under the name of *palpitation*, are found in close connection with various derangements of the general health and of special organs. Among the latter, those of the alimentary canal, but particularly of the stomach and the uterus, occupy the chief place. Perhaps the most painful of all the forms of cardiac palpitation is that resulting from either an imperfect depuration of the blood, or from a regular blood impoverishment, or anæmia, as is so frequently observed in cases of amenorrhœa and chlorosis.

We pass to a brief consideration of Spasm as occurring in the muscular organs which constitute the alimentary canal. It affects *the stomach and intestines* as well as the *œsophagus and pharynx*, while the severe pain determined by its occurrence in any part of the alimentary tract is very generally accompanied by other and various symptoms which cannot with any propriety be referred to now. Painful peristaltic spasm of the intestines is usually known under the name of *colic*. During its occurrence, and as affording proof of its occasional violence, *intussusceptio* and prolapsus of the rectum may take place. Foremost among the determining causes of colic is to be placed the presence of indigestible articles of food and morbidly altered secretions in the intestinal canal. But, besides this, the influence of the emotions, and more especially of fear and fright, is well known; while just as bronchial Spasm may be due to reflex nervous irritation, so may intestinal-spasmodic stricture, as it is called, to distinguish a temporary and functional from an enduring and organic contraction, similarly produced, have its seat in any part of the alimentary canal. In some instances the direct exciting cause is seated at a great distance from the induced disorder: of this nature no more common or manifest example can be given than that of colic, often very severe, resulting from the exposure of the lower extremities, it may be of the feet only, to cold and damp. *Spasm of the pharynx and œsophagus* is one of the most interesting of all the varieties of Local Spasms. It is of common occurrence, particularly in females, in whom it shows itself either as a reflex phenomenon dependent on uterine irritation, or—and this still more frequently—as one of the most striking features in a paroxysm of hysteria. It is not always an easy task to distinguish between Spasm of the œsophagus due to organic disease and that which is simply the result of a nervous irritation. The cautious introduction of the probang or œsophageal bougie is the most ready and certain means for establishing the diagnosis.

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[1] Laennec, who, while strongly insisting on the connection between asthma (asthme spasmodique) and catarrh, admitted the existence of a purely nervous asthma (sans aucune complication de catarrhe), has acknowledged the great difficulty there is in the satisfactory treatment of the disease. "Beaucoup de moyens," he remarks, "peuvent être opposés aux troubles de l'influence nerveuse qui constituent principalement l'asthme: *mais ici, comme dans toutes les affections nerveuses*, rien n'est si variable que l'action des médicaments; les remèdes qui réussissent le mieux chez un grand nombre de sujets sont sans efficacité pour beaucoup d'autres; et chez le même individu tel moyen qui avait produit d'abord des effets héroïques, et d'une promptitude surprenante devient tout à fait inefficace au bout d'un petit nombre de jours. Il faut successivement en essayer plusieurs, et souvent de trés-disparates: nous allons, en conséquence parcourir les diverses séries de moyens dont on a tiré le plus d'avantage dans l'asthme."—*Traité de l'Auscultation Médiate, Affections Nerveuses du Poumon.*

An irritation of the pharynx or œsophagus, of the stomach, bowels, or liver, is sometimes the direct cause of *hiccup* or *singultus*, a spasmodic affection extremely interesting in its nature. Sudden powerful jerking inspirations, accompanied by a peculiar noise, and succeeded by a brief expiration, interrupting speech, distinguish hiccup. It is essentially a reflex phenomenon; in the vast majority of instances depending on some peripheral irritation, but occasionally, as its presence in apoplexy, meningitis, and hydrocephalus testifies, determined by a central cause. There seems to be some difficulty in accounting for the occurrence of hiccup from an irritation of the phrenic nerve, as has been suggested by various writers; nevertheless it is consistent with the writer's observation in several instances of long-continued and distressing hiccup, that firm pressure exerted for a brief period over the lower part of the neck, corresponding to the situation of the scaleni muscles, so as probably to compress the phrenic, has led to its temporary and even entire arrestment. In singultus and in yawning, which resembles it in being of the nature of inspiratory convulsion—also in *sternutatio* or *sneezing*, where the expiratory function is involved—what is of consequence to notice is, as Romberg has pointed out, that the spasmodic action does not affect a single muscle, but, on the contrary, groups of muscles; and that these Local Spasms, more particularly the former hiccup, while occurring as independent affections, are still more prone to assume the symptomatic character; affording evidence of the existence of some other malady, or distant irritation.[1]

Spasm of the *urinary bladder* and of the *urethra*—what is commonly styled spasmodic stricture—are familiar to the surgeon. Vesical Spasm is not unfrequently a truly reflex phenomenon: this is witnessed on the introduction of the catheter or bougie, when violent and most painful efforts are made to evacuate the organ, even when at the time empty. Romberg insists on the action of the muscles being due to an irritation of the neck of the bladder, that particular part being, as Sir Charles Bell demonstrated, the most vascular and the most sensitive portion of the viscus. It is when the catheter reaches, or the calculus touches, the neck of the bladder, that the ischuria is produced: and the intense pain is seen to subside whenever the irritating body is removed from that particular portion of the organ. The irritation upon which vesical Spasm depends may, as we have seen to hold true of other forms of Local Spasm, be distant from the induced phenomenon. It may be resident in the kidneys, or in any part of the intestinal canal, but very specially in the rectum. Hemorrhoids are a frequent cause of vesical Spasm; and it is well known in how distressingly severe a degree that is apt to occur after the operation of their deligation. Exposure of the surface of the body, especially of the feet, to cold and wet, and depressing mental emotions, act in the same way.

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[1] "Häufiger als auf einzelne Nervenbahnen beschränkt, kommen die krampfhaften Athembewegungen zu Gruppen associirt vor, entweder selbständig, oder was öfter der Fall ist, abhängig, und in Begleitung von andern Affectionen." (Loc. cit., p. 354.)

As our object in this article has been, not to illustrate every example of Local Spasm, but rather to indicate the nature of this special morbid action by a brief consideration of some of its more important and most frequently occurring varieties, we shall now take a very rapid survey of a few other forms, and bring our remarks to a conclusion by offering some general observations with a special reference to treatment. There is a peculiar variety of Local Spasm affecting certain muscles of the face, and giving while it lasts a very strange aspect to the individual. In the *histrionic Spasm of the face*, by which title this affection is known, there are, in the language of Romberg, "grimaces, alternating or lasting, on one side, seldom on both sides, of the face."[1] Pain is occasionally, but by no means necessarily, an accompaniment of the disordered muscular action. A local malady essentially, because affecting the muscles governed by *one* nerve, the seat of the Spasm is in some instances still further localized by there only being one of the branches of the seventh pair involved. Of the latter are *blepharospasmus*, or Spasm of the eyelids, and the *risus caninus*. The peculiar convulsive grin thus named is caused when the molar and labial branches are affected. To it the terms *spasmus cynicus* and *sardonic laugh* are likewise applied. The relation of facial Spasm to chorea must not be overlooked; this association has been frequently noticed: and it is also a matter of not unfrequent observation that the Local Spasm lasts in some cases for a considerable period after the disappearance of the general nervous disorder with which it had been in the first instance connected.

Masticatory Spasm is witnessed in its most formidable degree when, as trismus, it accompanies, or is itself the chief element in, tetanic convulsions. In a much milder degree Spasm in the muscles which are supplied by the motor division of the fifth pair is seen as a reflex action, determined, as in children, by the presence of worms in the intestinal canal, or by the progress of dentition. The Spasm of the muscles is sometimes associated with a grinding of the teeth. To the occurrence of the latter symptom in persons of the gouty diathesis attention was called by the late Dr. Graves. Such grinding of the teeth continued for years as a daily habit, and produced very remarkable changes in the conformation of these organs, affecting sometimes one side of the jaw, sometimes both; so that in confirmed cases the teeth were frequently found ground down to the level of the gums.[2]

Spasm of the muscles of the eye, dependent on an irritation of the third, fourth, or sixth nerves, is seen in *strabismus*—which is to be distinguished from the paralytic form by the movement of the eyeball in other directions being in the former case possible—and in *nystagmus*. These spasmodic affections equally with others acknowledge a peripheral or central origin. Both are of common occurrence in connection with intestinal and dental disorders, but they are also not unfrequently the indications, sometimes among the very earliest, of mischief, inflammatory or otherwise, commencing at the base of the brain.

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[1] Loc. cit. "Mimischer Gesichtskrampf."
[2] Clin. Med., "Gout."

Painful Spasms of the muscles of the extremities are of very frequent occurrence; and with this affection, more especially seated in the lower limbs, and there in the calves, we are especially familiar under the name of *cramp*. The attack of cramp is usually sudden; and it frequently occurs at night, the person in bed being awakened from sleep by the seizure. During its continuance the muscular fibres are gathered up into a hard knot, which is always easily felt by touch, and may often be seen. The pain is very severe, and produces a feeling of sickness and depression, which may even lead to syncope. The patient not unfrequently gives utterance to an irrepressible exclamation or scream. Cramp usually lasts only for a few moments; it may, however, continue for minutes, and even hours. A sudden cessation of the Spasm may occur, or a more gradual relaxation of the muscular fibres ensue; but in either case, if the attack have been at all severe, sufficient injury during its continuance has resulted to the sensory nervous filaments as to cause a feeling of soreness, always increased by touch, and frequently an inability fully to exert the affected limb or other part for some time. The irritation of the sciatic nerve, upon which the painful Spasm of the muscles of the calf depends, is intimately connected with disorder of the stomach and bowels, and is also particularly prone to occur in persons of the gouty and rheumatic habits.

In Asiatic cholera the occurrence of intensely painful cramps contributes, as is well known, largely to the sufferings of its victims. Again, in persons of intemperate habits there is sometimes observed a tendency to the development of severe spasmodic action in the muscles, of the extremities more especially, but likewise of other parts of the body. In one instance which fell under the writer's observation a patient, having recently recovered from an attack of delirium tremens, was seized with most violent and painful Spasm of the muscles of both upper and lower extremities, during which the fingers were powerfully flexed and bent inwards on the palms of the hands, as in the carpal contractions of children. So severe was this case, that a syncopal depression, very threatening in its character, occurred. After lasting for several hours, and exhibiting for many days a marked tendency to recur, the affection passed off, and the patient entirely recovered both health and strength.

In the *treatment* of local, as of general, Spasms, the great object is to remove the cause on which they depend. In the brief consideration of the different varieties of Local Spasm now offered it has been shown that in a large proportion of cases the excited muscular action is induced by reflex action; that the direct exciting cause is a distant nervous irritation. Fortunately the removal, or at all events the lessening, of this irritation is in many instances within the power of our art. Again, in those cases, of the frequent occurrence of which proof has been afforded, which are characterized by a morbid state of the blood, *e.g.*, gouty or rheumatic, we may often be successful in our treatment by paying due attention to the therapeutical indications—in other words, by the employment of an alterative or eliminating plan, suggested by the peculiarity of each individual case. We may as effectually subdue the morbid action of Spasm as we are constantly enabled, by the use of suitable remedies, to relieve that of pain in neuralgia. In addition we possess in various agents a power of controlling or completely removing such excited nervous action as induces Local Spasm: not indeed one upon which we can invariably rely, because we are often disappointed in the results; nevertheless the remarkable therapeutical effects which succeed the exhibition of various of the antispasmodic and calmative remedies is such as to convince us of their efficiency. Our knowledge, moreover, regarding the action of such remedies is on the increase. It is only quite recently that a valuable addition has been made in the bromide of potassium, the operation of which in removing the painful cramps of cholera, not less than in many instances averting the convulsive seizure of epilepsy, has been witnessed by numerous observers.[1]

Pressure firmly exerted on the thigh relieves a violent cramp of the calf, while, according to Dr. Wise, the application of a tourniquet so as to compress the bloodvessels will banish the exhausting muscular contractions in cholera.

Finally, in the treatment of such exalted nervous action as determines Local Spasm, as in the proper management of every form of derangement of the nervous system, however slight or severe, let the potent influence of peculiarity in psychical constitution, and of the ready susceptibility in some to the operation of all manner of external impressions, not be lost sight of.

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[1] See Note on the Therapeutical Effects of Bromide of Potassium by James Begbie, M.D., Edin. Med. Journ. 1866. Also, The Action of Bromide of Potassium upon the Nervous System, by J. Crichton Browne, M.D., Ibid. 1865.

VII.

TORTICOLLIS.

By J. Russell Reynolds, M.D., F.R.C.P.

Definition.—A spasmodic condition of the muscles of the neck—generally clonic, but rarely tonic—whereby the head is displaced to one side, or towards one shoulder; occurring almost exclusively in adult life, and characterized by great obstinacy and chronicity.

Synonyms.—Wry-neck; spasmodic wry-neck; spasm in the muscular distribution of nervus accessorius Willisii, and of the superior cervical nerve (Romberg).[1]

Causes.—So far as I have seen, the male sex has been slightly more frequently affected than the female; but the difference is so small, that its existence is of no diagnostic value. With only one exception, all the cases that I have seen have presented symptoms after thirty years of age; and the majority after forty. There has been no one thing, nor any combination of circumstances, which has occurred with such frequency as to warrant a belief in its operation as an *exciting cause.* Once a strained position, maintained for a long time; occasionally exposure to cold; sometimes a sudden shock, either mental, moral, or physical; and at other times the presence of long-continued anxiety, or the recurrence of pregnancy, has been referred to by the patient as the cause of symptoms; but, in regard of such modes of causation, we can see distinctly that which might lead to disturbance of the nervous system of any kind whatsoever, but we fail to see anything which should conduce to this special form of derangement.

In one case that I have seen the symptoms were preceded by hemiplegia; in another by paralysis agitans of the side from which the head was turned; in a third, and fourth, and fifth, there was previous "writer's cramp;" in a sixth there was histrionic spasm of the face; but in the majority of cases the nervous system had exhibited no prior derangement, and had continued free from ulterior disturbance for a long period of years.

The position in life and the occupation of those who have suffered from Torticollis have varied widely, and I have not been able to attribute the malady with anything like constancy to that common cause of nervous disease—overwork.

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[1] Syd. Soc. Transl. of Manual of Nervous Diseases of Man, vol. i. p. 316.

Symptoms.—There is great similarity in the symptoms presented by different individuals, when once the disease is established, and is free from accidental complications. Sometimes the *commencement* is sudden, but much more commonly it is gradual, and often so insidious at first that the real nature of the malady is overlooked. The patient feels uneasy in the neck, thinks that something is wrong with his cravat, or with his pillow, and only after several months discovers for himself, or is told by others, that his head is not straight. There is with this want of symmetry some uneasiness in the neck, extending from the occipital protuberance downward to one of the shoulders, and sometimes onwards into the arm, or even forearm. As the malady *advances* the uneasiness becomes greater, and sometimes amounts to definite pain, felt usually in the same direction. The pain is increased by voluntary efforts to bring the head into the middle line, but sometimes attains its maximum when the head is carried round to the furthest point possible by the spasmodic movement. The pain is not severe, but generally of dull, aching character; and often is relieved by lying down, and keeping the head still by resting it upon a pillow.

Observed casually, a case of medium severity would give the impression to a bystander that the patient's cravat was uncomfortable, and that he was trying to make it less so by moving the head, in a somewhat restless manner, towards one side; or that he was making some attempt to look at an object on one side of him, which object he could not "get his head round" sufficiently far to see conveniently.

Upon more careful examination it is seen that the head is constantly being moved by a succession of jerks, in such manner that the occiput is depressed, and the chin raised, and that the movement is in a definite direction, hour after hour, and month after month. Early in the case the individual is able so far to antagonize the spasm, by a simple voluntary effort, as to bring the head into the middle line, or even beyond it; but as time passes on this often becomes impossible, and the hands are used to pull the head back again into its proper position.

When Torticollis has existed for a few months only, the head presents a constant series of movements—the spasm and the voluntary effort so balancing one another that the effect is that described above. But when it has lasted for a longer period, the head is habitually "carried on one side;" for the voluntary interference with the spasm, although frequent—if not constant—does not suffice to bring the head into a central position, being overcome by the spasmodic contraction. Sometimes, even under these circumstances, a very strong voluntary effort may restore momentary equilibrium; but the effort is attended by distress, if not by pain, and is often followed by an exaggeration of the spasm.

The muscles of the neck on the side from which the chin is turned are found hard, contracted, and often hypertrophied; those on the opposite side are frequently soft, and sometimes wasted. Early in the history of Torticollis it would seem—so far as my experience extends—that the deeply seated muscles at the back of the neck are most affected; the sterno-mastoid, at such time, being often free from spasm. At a later period the sterno-mastoid is found hard, frequently hypertrophous.

Occasionally the muscles of the shoulder are so involved that the acromion is raised; more rarely the muscles of the face present histrionic spasm; and not unfrequently there is some difficulty in controlling the movements of the arm. I have noticed sometimes difficulty of deglutition, and in a very few cases some morbid condition of motility in the leg; but these symptoms must be regarded as complications rather than conditions of the disease now under consideration; for it more frequently happens that the muscles of the neck are alone involved in the morbid contraction.

As a rule, to which the exceptions are very rare, the spasms cease during sleep; and not only so, but when the patient lies down and supports the head. They are increased by all that lowers or disturbs the general health, and by emotional excitement.

The electric irritability of the contracting muscles I have found much increased when tested by faradisation: the electric sensibility is sometimes so greatly augmented that an interrupted current, not in the least degree painful on the healthy side, was perfectly intolerable when passed through the seat of spasm. It has appeared often that the relaxed muscles, on the side opposite to the contraction, have exhibited less than their normal contractility; but I have never found them so defective that it was impossible to restore the head to equilibrium by their distant faradisation. This battery current, when continuous, and passed through the contracting muscles, relaxes the spasm and allows of temporary equilibrium; but, when interrupted, its action is similar in kind to that exerted by the induced current of faradisation: there is, however, less intensity of contraction, and much less display of elastic sensibility. The effects of either the battery current or of faradisation appear to be singularly transient, in whatever manner they may have been produced. It has often happened to me to see that a head which had been maintained *in equilibrio* for many minutes, and that day after day for a considerable number of days, returned at once to its spasmodic jerkings the moment that the application was suspended. Sometimes it has been obvious that the spasm was subsequently increased by the electricity.

The side to which the twisting occurs has been sometimes the right, sometimes the left. There appears to be no special proclivity to the affection of one side rather than the other in either sex; but when once the malady has shown itself, its pertinacity is remarkable: it remains in exactly the same position, with slight tendency to extend; or it may in rare instances disappear for eight or nine years, and then return to the member that it had previously affected. In many cases *progress* is so slow that no change is observable after several years—*i.e.*, no change as to locality—whereas in others the malady seems to extend either upwards or downwards, and involve muscles not implicated at the first. In this manner the face may be distorted, or the arm may be rendered partially useless by either rigidity or weakness; the head becomes more or less fixed in an oblique position, the ear of one side being drawn down to the shoulder, and the chin thrown upwards and outwards in the opposite direction. When left entirely to itself—*i.e.*, when not interfered with by either the will, the ideas, or emotions of the patients, or by any influence from without—the spasm is tonic, and the head may remain for hours drawn to one side, but motionless. This is rarely, if ever, noticed early in the history of a cure, and sometimes it is never observed; but, even when it occurs after several years' duration of the spasm, the slightest emotional disturbance or attempt at voluntary movement brings back the clonic contraction: and the only difference to be recognized between the early and the later stages of the malady is, that in the latter the head is never brought back to the position of exact equilibrium, and that there is less obvious movement of the head; for, as it seems, the habitual struggle between volition and clonic spasm is given up, and the latter, having gained the day, allows tonic spasm to take its place.

The mental faculties, the sensibility of the skin, the special senses, and the general health undergo no necessary changes in Torticollis. In some highly-marked instances there has been complete integrity of function in every direction; the one thing that has been wrong has been the disease itself. Sometimes the general health has been impaired, the patient has been anæmic and weak; but this has been frequently the result of the annoyance occasioned by the spasm, and very rarely the supposed cause of its development.

Numbness and anæsthesia may occur in the arm, together with œdema, when the scaleni are so much affected as to press upon the brachial plexus and its adjacent veins.[1]

DIAGNOSIS.—The symptoms that have been now described are sufficient when carefully regarded to enable the practitioner to distinguish this disease from every other. An accidental exposure to cold may produce "stiff-neck;" but here the head is permanently fixed in one position, and maintained therein, not by spasmodic rigidity of muscle, but by the fear of pain which, as the patient knows, any movement may occasion. Such malady has its relations to pleurodynia, lumbago, and "muscular rheumatism;" it is sudden in its development, and temporary in its duration, and could only be accidentally mistaken for Torticollis. The opposite error is sometimes made—viz., that of regarding genuine spasmodic Torticollis as a simple "stiff-neck from rheumatism or cold." In its earliest stage, however, genuine Torticollis should be at once distinguished by the clonic character of the spasm, and freedom from pain or movement.

Injuries to the spine occasionally produce stiffness of the neck, and this to such a degree that the head may be permanently placed in some awkward position. In such cases the spasm is tonic; there is marked tenderness of the spinous processes, and with this some fulness or hardness around or behind the vertebral column; and there is also some impairment of the motor or sensory properties in the arms and legs.

In certain *organic diseases of the brain* accompanied by hemiplegia there is sometimes Torticollis, just as there is synergic movement of the eyeballs; but the mode of onset of symptoms is such that a case of cerebral apoplexy cannot well be confounded with the malady now under consideration. The opposite mistake has, however, sometimes been made, and an individual who is beginning to suffer from Torticollis spasmodica has been supposed to be the subject of organic disease of the brain. For the distinction between these two very different conditions it is sufficient to bear in mind that in the one the disease is limited to the neck, in the other it occurs in combination with marked hemiplegia; that in the former the spasm is clonic, in the latter tonic; and that in the first the development of symptoms is insidious, gradual, and local, whereas in the second it is sudden, and of wide distribution.

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[1] Romberg, loc. cit., p. 317.

It is enough to mention the existence of cases in which *growths*, benignant or malignant, may affect the position of the head, in order to prevent the occurrence of any errors in diagnosis.

PATHOLOGY.—Anatomical inquiry has not yet shown the locality or existence of any special lesion of the nervous centres with which Torticollis is necessarily associated. Physiological experiment has proved that it may exist when the spinal accessory nerve is irritated at its passage through the foramen lacerum,[1] or when injury is inflicted on certain muscles, upon the olivary body, or the auditory nerve.[2] The disease would appear to be one of those curious conditions—not yet fully understood—in which some "centre" of associated movements is so altered that there follows a disturbance of the normal equilibrium; a disturbance exhibiting itself at first by dynamic change, but subsequently leading to structural alterations in the affected muscles. It has its analogies in writer's cramp and histrionic spasm, and its peculiar and intimate pathology is a question as yet reserved for further investigation.

PROGNOSIS.—When once established—*i. e.*, when fully developed and of three or four months' duration—Torticollis is one of the most obstinate of maladies. It has sometimes yielded to treatment, under favourable circumstances; but it has almost invariably recurred, and has proved capable of resisting all efforts made for its relief.

Unfortunate as the prognosis is with regard to the cure of this special malady, there is one ground for consolation—viz., that it is not by any means necessary, nor is it at all highly probable, that the victim of Torticollis should suffer from any other nervous disease. Sometimes it forms but part of a general nervous disorder; but, as a rule, it exists alone; and although it may continue for many years, the source of great but measurable annoyance, it does so without entailing any danger to life, or any high probability of ulterior change. Prognosis, therefore, is based upon the duration of the disease, and its complication with other signs of nervous malady. When it exists alone, the patient may look forward to a troublesome and obstinate affection; but he may, at the same time, know its limits, and be directed to go on without fear of further mischief.

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[1] Volkmann, quoted by Romberg, loc. cit., p. 316.

[2] Brown-Séquard, Lectures, p. 194.

TREATMENT.—In its early stages Torticollis has yielded to various plans of treatment; iron, setons, moxæ, rest, mercurials, electricity, and the division of nerves or of muscles, have each been followed by a cure: but in the advanced stages no one, nor any combination, of these modes of treatment has availed to cure, or even to modify the disease.

I have used all kinds of soothing applications, have employed electricity in every form, and have failed to influence the disease when once it has become firmly fixed; but have found that the continuous current has been useful when the malady has existed for a few months only, and have also at that period seen notable advantage from the continued application of morphia by the method of hypodermic injection.

It would seem desirable to enjoin rest; to secure the regulation of the general health; to apply a moderate continuous current to the muscles which exhibit spasm, and a mild induced current to their antagonists; and to inject morphia, hypodermically, for a lengthened period. It is not essential that the morphia should be injected into the neck; it may be introduced into the arm or thigh, or any other convenient locality: but it is important that its use be steadily continued, and that the quantity injected be gradually increased until a definite effect is produced upon the spasm. Beginning with the tenth part of a grain, the quantity may be increased, if necessary, until two, or even three, grains are injected twice daily; and when the patient can bear this amount, the spasm has sometimes yielded. But it often happens that morphia, even by hypodermic administration, cannot be borne, from the fact of its producing nausea, constipation, and an amount of malaise that is greater than the evil it is intended to relieve; and in such cases the Torticollis is positively increased by the injection. Several patients whom I have known with Torticollis have positively refused to continue the injection of morphia from the misery which it has thus occasioned.

Mechanical contrivances have been employed in order to force the head into position; but these, although so managed as to be borne for a short time—*e.g.*, to enable a clergyman to get through a service, or a doctor to visit two or three patients in succession—are often found to be productive of so much annoyance, or even pain, that the patient would rather trust to his own hands or to the "chapter of accidents" in order to get through his work. The most simple, and at the same time most effective, appliance that I have seen for mild cases is that devised by Dr. Hearne, of Southampton; but it has failed to be of service when the disease has been of long duration. Mr. Heather Bigg has constructed several machines which meet the difficulty for short periods of time; but I have not yet seen any apparatus which a patient with confirmed Torticollis could bear habitually.

Division of the nerves has been useless,[1] and division of the sternomastoid worse than useless, for it has led to an exaggeration of the spasm in the deeper-seated muscles at the back of the neck, as I had occasion to observe in a well-marked case that came under my notice some years ago.

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[1] Romberg, loc. cit., p. 319.

VIII.

LOCAL ANÆSTHESIÆ.

By J. Warburton Begbie, M.D., F.R.C.P.E.

The term Anæsthesia (α privative, αἴσθησις, sensibility), indicates deprivation or loss of sensibility, and was first employed by the distinguished Cappadocian physician, Aretæus.[1] There exist three abnormal modifications of the function of sensation: *first*, it may be lost; *second*, it may be exalted (hyperæsthesia); *third*, it may be perverted.

By Local Anæsthesia we understand a morbid state of sensibility, in which the normal physiological sensation of a part is abolished entirely, or nearly so.

Since the introduction of ether and chloroform inhalation, for the purpose of destroying pain, it has been customary to describe these valuable agents as anæsthetics, and the condition of insensibility into which the person is thrown by their action as Anæsthesia. With this interesting phenomenon we have at present no concern.

In Local Anæsthesia the want or failure of the due impression must arise from a morbid state of the extremities of nerves, or of an afferent nerve ceasing to convey the impression to the sensorium, or of the sensorium itself.

Thus we are entitled to limit the seat of the morbid influence, because these three organs, or classes of organs, are concerned in the production of such sensation.

With precisely the same signification as Anæsthesia, the expression, paralysis of sensation, or of the nerves of sensation, has been employed. It were better, however, to abandon the use of paralysis in this sense altogether, and to restrict it to the loss of power of motion. The intimate connection of paralysis and Anæsthesia is abundantly conspicuous: the latter is very frequently noticed as an antecedent phenomenon of the former, or they occcur simultaneously; and while paralysis lasts Anæsthesia may continue, or sensation may be restored long before the recovery of the power of motion.

The special situations in which Anæsthesia is met with, or may be considered apt to occur, are various. For convenience of illustration the following classification may be made, and to the forms now to be mentioned attention will be very briefly directed: (*a*) Anæsthesia of the skin (cutaneous Anæsthesia). (*b*) Anæsthesia of muscular nerves. (*c*) Anæsthesia of sensorial nerves. (*d*) Anæsthesia of the fifth pair of nerves. (*e*) Anæsthesia of mucous surfaces. (*f*) Anæsthesia of the viscera.

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[1] ἢν δὲ ἀφὴ ἐκλείπη μούνη κοτέ—σπάνιον δὲ τὸ τοιόνδε—ἀναισθησίη μᾶλλον ἢ πάρεσίς κικλήσκεται.—Περὶ Παραλύσεως. Περὶ Αἰτιῶν καὶ Σημείων Χρονιῶν Πάθων. Βίβλιον Πρῶτον.

(*a*) *Anæsthesia of the Cutaneous Nerves.*—The notable and lasting diminution, or the entire loss, of the tactile sense of the skin is what is understood by cutaneous Anæsthesia. It is by a careful examination as to the delicacy of tactile sensibility, and the perception of degrees of temperature, that we are enabled to determine the extent to which Anæsthesia of the surface exists. For the former purpose the mere statements of the patient will not suffice. Besides measuring the degree and determining the precise seat of Anæsthesia by the point of the needle, recourse must be had to the method of experiment suggested by Weber, testing the consciousness of the patient, while blindfolded, to the two points of a pair of compasses placed at different parts upon the skin, or, which is still more satisfactory, employing the delicate little instrument known as the æsthesiometer of Dr. Sieveking. The ready and accurate determination by the patient of degrees of temperature, heat and cold, is impaired or destroyed: it is not uncommon to find hot things styled cold, and cold things hot. In marked instances of cutaneous Anæsthesia the power of resisting the injurious influence of temperature is lost; and not only so, but, owing to a similar defect, superficial sores are readily formed on parts of the body exposed to even a slight degree of pressure. Evidence of the derangement of the circulation is afforded by a change in the color of the affected part; it is apt to become livid or blue in appearance, and extravasations of serum, and even of hæmatin, occur. Distressing sensations are experienced by the patients—chiefly numbness and pricking; also formication.

In alluding to the treatment of cutaneous Anæsthesia, the distinguished German writer on nervous diseases truly observes, "Die Behandlung der Anæsthesia cutanea war bisher eine *oberflächliche*, im wahren Sinne des Wortes;" but while this is to be regretted, we may reasonably anticipate an increase of our knowledge, owing to the much more satisfactory manner in which the causes and seat of disease have of late, and are at the present time, being investigated.

(*b*) *Anæsthesia of Muscular Nerves.*—The loss of the power of motion is usually unassociated with any marked degree of muscular Anæsthesia. On the other hand instances are on record in which a very perfect insensibility to pain has existed in muscles, while the power of moving them has been retained. It is of the utmost importance to distinguish between the loss of tactile sensation (cutaneous Anæsthesia) and the definition of sensation in muscles, for without carefulness in examination these two are capable of being, and in some instances have no doubt been, confounded. Romberg makes the interesting observation, that muscular Anæsthesia, without the loss of or any damage done to tactile power, exists in tabes dorsalis.[1]

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[1] Muskelanästhesie.

(*c*) *Anæsthesia of Sensorial Nerves.*—The nerves of special sense which thus suffer are the optic (Anæsthesia optica), the Auditory (Anæsthesia acoustica), the Olfactory (Anæsthesia olfactoria; Anosmia), and the Gustatory (Anæsthesia gustatoria; Ageustia). To the many interesting affections included under these terms—for example, amblyopia and amaurosis under optic Anæsthesia—it is quite impossible in this brief notice of Local Anæsthesiæ to make any reference, while such important diseases demand a separate and detailed consideration.

(*d*) *Anæsthesia of the Fifth Pair of Nerves* (Facial or Trigeminal Anæsthesia). — Physiological experiments have demonstrated the remarkable effects produced by section of the fifth pair; of these insensibility of the face, eye, nostrils, cavity of the mouth and tongue, is the most conspicuous: while the extent of the Anæsthesia is of course determined by the nervous injury being limited to one or more branches, or, on the other hand, involving the trunk before division. Experimental inquiry, as well as clinical observation, have further shown that when injury or lesion of the nerve exists within the cranium, the resulting phenomena are not such as are included in Anæsthesia merely, but paralysis and impairment or loss of special sense are also induced. Romberg,[1] in directing attention to the different diagnostic symptoms, has indicated certain very important particulars, as follows: (*a*) The more the Anæsthesia is confined to single filaments of the fifth pair, the more peripheral the seat of the cause will be found to be. (*b*) If the loss of sensation affects a portion of the facial surface, together with the corresponding facial cavity, the disease may be assumed to involve the sensory fibres of the fifth pair before they separate to be distributed to their respective destinations; in other words, a main division must be affected before or after its passage through the cranium. (*c*) When the entire sensory tract of the fifth nerve has lost its sensation, and there are at the same time derangements of the nutritive functions in the affected parts, the Gasserian ganglion, or the nerve in its immediate vicinity, is the seat of the disease. (*d*) If the Anæsthesia of the fifth nerve is complicated with disturbed functions of adjoining cerebral nerves, it may be assumed that the cause is seated at the base of the brain. Thus facial Anæsthesia, as a phenomenon of disease, may be in itself a simple, really trivial, affection, or it may be the indication of serious organic disease. In the former case it will be apparently independent and isolated; in the latter, linked with other striking features, its significancy will as little escape observation as its existence.

Facial Anæsthesia in some instances comes on gradually; in others its occurrence is sudden. Neuralgic pain, or a condition of local hyperæsthesia, may precede its development; while facial palsy and facial Anæsthesia are occasionally associated.

(*e* and *f*) *Anæsthesia of Mucous Surface, and of the Viscera.*—The morbid condition in such circumstances must depend on a failure of the sympathetic to conduct the impression to the brain; but, as a general rule, impressions made on the ganglionic nervous system are not thus conveyed and it requires a powerful irritation, or condition of notable hyperæsthesia, in order that a consciousness of their existence should be established. The inquiry into the operation of the organic nervous system is one of very great difficulty, and Romberg has truly remarked in regard to it, "Von vorn herein bekennen wir unsre unbekanntschaft mit diesen Zuständen, die bisher nicht einmal zur Sprache gekommen sind, und deren Forschung mit grossen Schwierigkeiten verbunden ist."

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[1] Anästhesie des Quintus Lehrbuch der Nervenkrankheiten.

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